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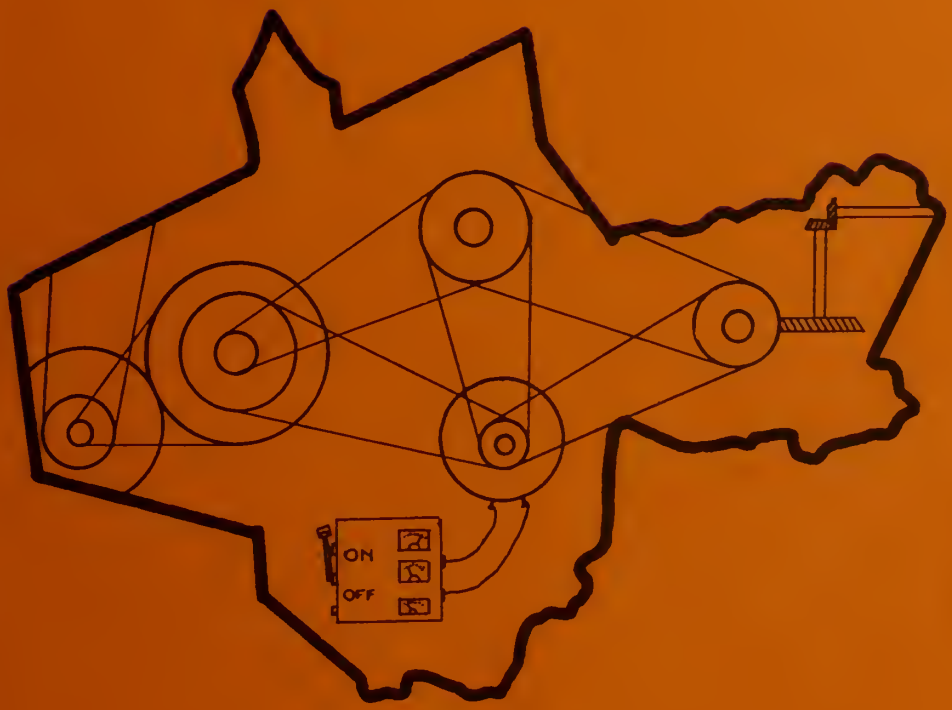
industrial site survey



OLD COLONY PLANNING COUNCIL

Old Colony Planning Council

232 MAIN STREET
BROCKTON, MASS. 02401
617-583-1833

DANIEL M. CRANE
EXECUTIVE DIRECTOR

June 27, 1974

To the Mayor and City Councillors of the
City of Brockton, The Selectmen of the
Towns of Abington, Avon, Bridgewater, East
Bridgewater, Easton, Hanson, Pembroke, West
Bridgewater and Whitman

Ladies and Gentlemen:

The following report entitled "Industrial Sites Survey" is hereby submitted for your consideration. This report, prepared by the staff of the Old Colony Planning Council, is the result of the Council's continuing effort in promoting economic development in the Brockton Area.

The initial phase of this study included an inventory and analysis of the Brockton regional economy and recommended a program for achieving a more independent economic base for the Old Colony area. A more recent report presented more detailed economic data and gave a recommended strategy for attracting new "target" industries to the area.

This Industrial Site Survey is a logical extension of the recommendations of these earlier studies. This is a survey of the Old Colony area, conducted to determine the most suitable sites for one or more regional industrial parks. Included in this study is an analysis of the environmental, economic, transportation and land use considerations which are involved in the selection of a large preplanned industrial site.

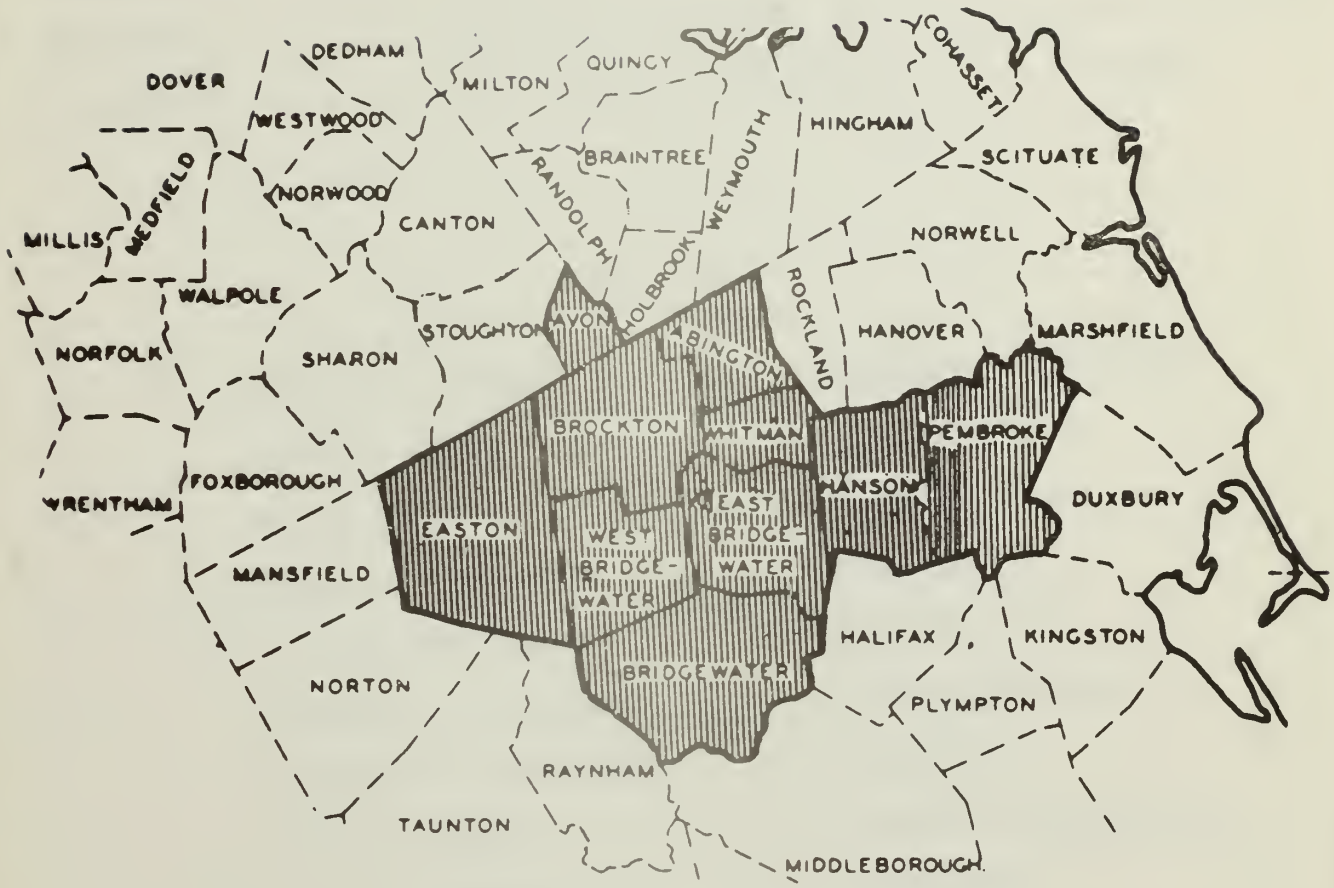
It should be pointed out that this document is not intended to be used to "sell" the advantages of the area to perspective industrial buyers. It is up to the region and the local communities involved to decide how best to use this report to further their own long-term goals and objectives.

Very truly yours,

John J. DeMarco
President
Old Colony Planning Council

JJD:jm

OLD COLONY PLANNING COUNCIL



SERVING

ABINGTON AVON BRIDGEWATER BROCKTON
EAST BRIDGEWATER EASTON HANSON PEMBROKE WEST BRIDGEWATER WHITMAN

SCALE IN MILES

0 10 20

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Report prepared by John Gowdy; Maps by Norman Smith.

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The preparation of this report was financially aided through a federal grant from the Department of Housing and Urban Development, under the Urban Planning Assistance Program authorized by Section 701 of the Housing Act of 1954, amended.

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introduction

INTRODUCTION -

This report represents the third phase of the Economic Base Study and Development program for the Brockton area. Phase One of this study, completed by Metcalf and Eddy, Inc., included an inventory and analysis of the regional economy and recommended a program for achieving an independent economic base for the Old Colony area. Phase Two of the study was conducted jointly by Metcalf and Eddy and the staff of the Old Colony Planning Council. The Phase II report presented detailed economic data for the area and gave a recommended strategy for attracting new "target" industries to the Old Colony region. This report, Phase Three, is a logical extension of the recommendations of Phase One and Phase Two. Included here is an analysis of environmental, economic, transportation and land use considerations which are involved in the selection of regional industrial sites for the Old Colony area.

Most communities realize the importance of attracting new jobs to their region. However, local officials are beginning to take a closer look at the effects of industrial growth. The economic benefits of a new industry must be weighed against the attendant increases in expenditures for municipal services, school enrollment and possible adverse environmental effects. Although it is beyond the scope of this report to examine these issues in detail, the following information developed by the U. S. Chamber of Commerce is cited to demonstrate the impact of additional industrial growth upon an area.[1]

<u>One hundred industrial workers mean:</u>

Population	.351 more people
	. 97 more families
	. 79 more school children
	. 68 more employed in non-manufacturing jobs
Economy	.$1,036,000 more personal income per year
	.$ 490,000 more bank deposits
	. one more retail establishment
	.$ 565,000 more retail sales
Municipal Services	an increase of 351 people would mean:
	.47,385 more gallons of water consumed per day
	.35,100 more gallons of daily wastewater flow
	. 1,755 pounds of solid waste per day
	. 140 more automobiles in the community
	. 2.2 new grade school rooms
	. 1.65 new high school rooms
	. 4 acres of municipal lands (Playgrounds, Parks, etc.)

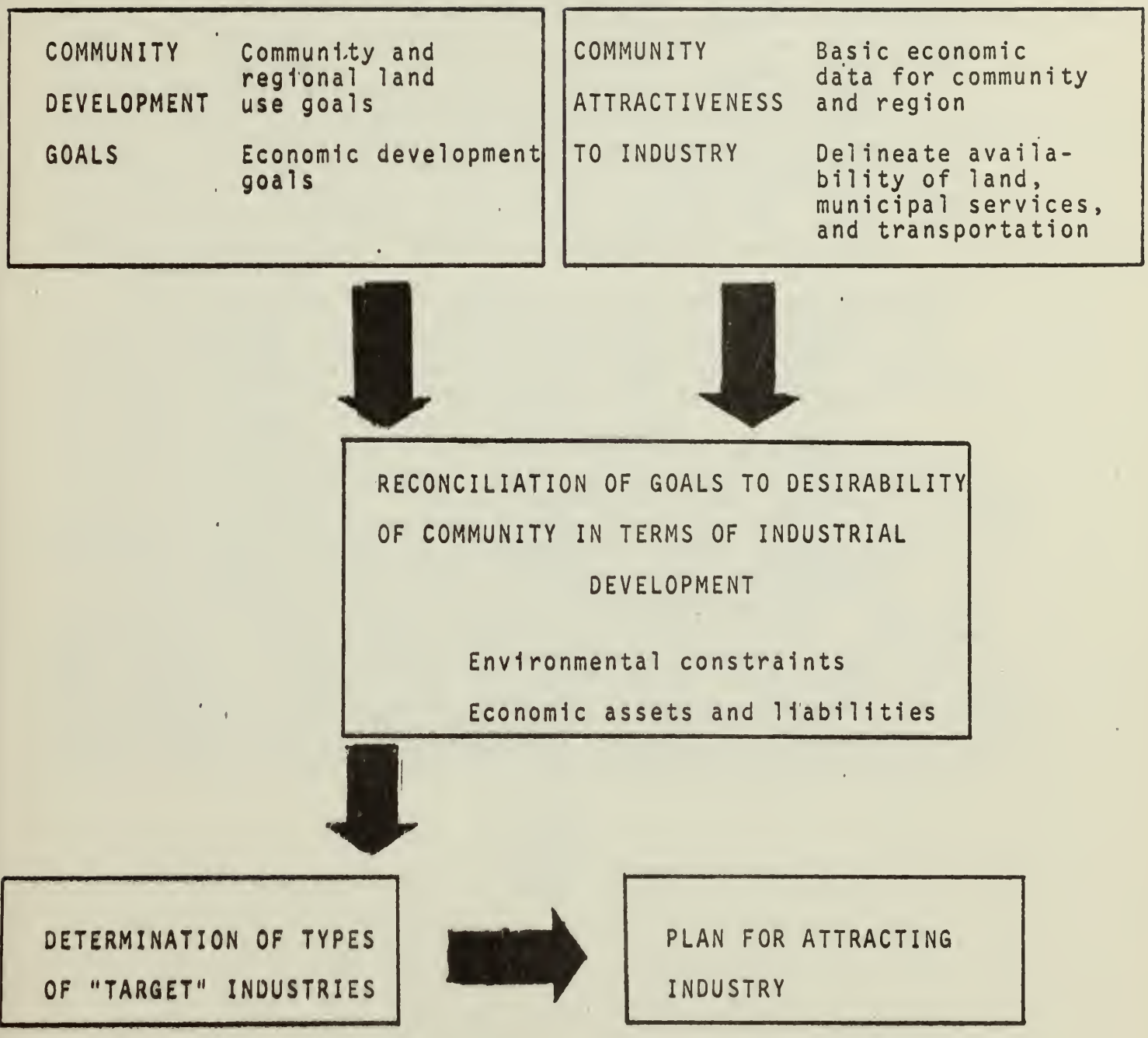
[1]"What New Jobs Mean To A Community", Pub. by Chamber of Commerce of the United States, 1973, Washington, D.C.

It is no longer enough to evaluate new industry solely in terms of the number of additional employees or payroll income. The basic question should be whether or not the industry will, after an array of factors are considered, be an asset to the community. Great care and careful consideration of each potential industrial site must be made if the individual communities and the region as a whole are to benefit fully from industrial growth.

The objective of industrial development efforts should be to fully utilize resources in a manner consistent with the long term goals of the community and the region. Industry and commerce should be used by the community to attain predetermined community objectives.

The industrial development commissions, then, should be more than a promoting agency "selling" the region to perspective industrial buyers. They are also charged with the responsibility for helping to create and maintain an environment for doing business that is compatible with community resources and social as well as economic objectives.

The following chart illustrates the relationship between community goals and objectives and the process of attracting new industry. First, the community's basic goals have to be reconciled with its attractiveness to potential industrial settlers. Obviously, a town with no suitable sites will not be able to attract industry, even though it desires this type of development. In view of the present critical pressures on the environment, the town should then take a second look at the pressures industrial expansion would have on its eco-system. Only when these issues are clearly defined can the community determine which types of industry are compatible with its goals and objectives. With this solid base of information the community will be able to formulate a comprehensive plan for attracting the desired type of industrial development.


COMMUNITY DEVELOPMENT GOALS
Community and regional land use goals
Economic development goals
COMMUNITY ATTRACTIVENESS TO INDUSTRY
Basic economic data for community and region
Delineate availability of land, municipal services, and transportation
RECONCILIATION OF GOALS TO DESIRABILITY OF COMMUNITY IN TERMS OF INDUSTRIAL DEVELOPMENT
Environmental constraints
Economic assets and liabilities
DETERMINATION OF TYPES OF "TARGET" INDUSTRIES
PLAN FOR ATTRACTING INDUSTRY

Format of Report: The chart on the following page illustrates the general methodology used in preparing this report. First a general survey was made of the Old Colony region to determine major transportation routes, general soil conditions, wetland areas, areas served by municipal sewerage systems and other items of regional significance. A site selection methodology was then developed, considering important factors mentioned in the economic literature and in various trade journals. During the course of this investigation it became apparent that some of the most important factors considered by businessmen in industrial location decisions, such as labor characteristics and market area trends, are more or less uniform in the towns considered here because of the area's small size. Data concerning these uniform factors is present in the appendix beginning on page 51.

The next step was to gather data for specific potential industrial sites in each community based on interviews with local industrial development commissions, town records and interviews with other knowledgeable local officials. Factors described in the methodology section of the report were examined in detail for each specific site.

In the fourth section of the report the sites selected for inspection were evaluated in terms of the criteria developed in previous chapters. The most suitable sites in terms of these criteria were then described in detail in the final chapter. An annotated bibliography is presented for those who wish to do further reading on the subject of industrial development.

This report is primarily concerned with determining areas suitable for fairly large regional industrial areas. Such an area should have the physical capacity to become a major employment center for the region and should be at least 300 acres in size, giving the site ample room for future expansion. It should be pointed out that there are several sites not evaluated in this survey that could be considered for community industrial needs.

REGIONAL POTENTIAL FOR

INDUSTRIAL SITES

Soil suitability
Municipal sewerage
Environmental considerations
Transportation
Zoning
Other Utilities

METHODOLOGY FOR EVALUATING

SPECIFIC REGIONAL SITES

Environmental impact
Utilities
Site size
Adjacent land use
Transportation
Other amenities

INVENTORY OF LOCAL

COMMUNITIES

APPLICATION OF SITE SELECTION CRITERIA

Weighting of factors
considered in survey

SELECTION OF REGIONAL INDUSTRIAL SITES

regional industrial potential

GENERAL SURVEY:

The first step in selecting regional industrial sites is to broadly delineate the major constraints and inducements to industrial land use in terms of important environmental and socio-economic considerations. In this section of the report the following factors are considered; environmentally critical streams, ponds and wetlands; ideal soil types for industrial sites; major transportation routes; existing industrially zoned land; and, where applicable, existing areas served by municipal sewers. It should be pointed out that the map included here is not designed to pinpoint specific industrial park sites. It can, however, give a general picture of the industrial site potential of the region and suggest broad areas where such sites might be located.

Site Selection Criteria

The selection of criteria to evaluate specific sites is made more difficult by the fact that the locational factors considered to be most important by industrial developers are area wide or even regional in nature. For example, in 1972 a group of utility executives were asked to list the primary assets in their area which they felt made the area attractive to industry. These executives listed the following ten factors as being the most important.[1]

1. labor
2. quality of life
3. geographical location
4. taxes and other economic factors
5. transportation
6. utilities
7. miscellaneous (i.e. availability of raw materials)
8. environmental considerations
9. municipal regulations and attitudes
10. land

[1] Source: EEA Survey among electric utility area development executives, quoted in "Environment and labor quality take top priority in site selection" Industrial Development, Vol. 142, no. 2, March/April 1973, pp. 13-15.

Regarding the primary factors to be considered in specific site selection the following items were considered to be most important:

1967	1972
1. labor availability	1. environmental considerations
2. availability of plant size	2. labor factors, quality and supply
3. market proximity	3. availability of utilities
4. labor potential (quality)	4. transportation, primarily highways
5. size of plant site	5. social factors, emphasis on trend to rural areas and suburbs
6. roads and highways	6. community attitudes toward industry
7. adequacy and type of transportation	7. low cost financing
8. community acceptance	8. supply and cost of available land
9. water supply	9. markets
10. expansion possibilities	10. taxes

Many of these factors such as labor supply, availability of water and to a large extent social factors and community attitudes are assumed to be more or less equal in the ten OCPC communities. These lists can, however, point out some important factors to consider particularly in terms of site selection. All of these factors will be examined in greater detail in the section entitled "Methodology for Evaluating Potential Regional Sites".

It is interesting to notice the change in relative importance of the site selection factors stated from 1967 to 1972. Environmental considerations, the item of primary importance in 1972, was not even mentioned in 1967. In general, the survey conducted in 1972 seemed to show an increasing concern for the effects upon industry of local community attitudes and social trends.

Regional Considerations:

Soil Suitability -

In areas without municipal sewer lines, sewage is usually disposed of through individual or on-site systems. The efficiency of these individual systems depends upon the amount of effluent and the rate at which it moves through the soil. Soil properties, then, are an extremely important consideration in selecting potential industrial sites in areas not served with a municipal sewage system.

The U. S. Soil Conservation Service (SCS) has mapped the soil types according to location in Southeastern Massachusetts. SCS has also determined the limitations of various soil types for a variety of land uses. Using the SCS maps and soil limitation

information it is possible to delineate the general location of the most suitable areas for industrial sites within the region in terms of soil types and properties. Factors considered by SCS in determining the soil limitations for industrial use include: hazard of flooding; depth to bedrock or to a slowly permeable layer; depth to a temporary (seasonal) or relatively permanent high water table; surface rockiness; slope in relation to land leveling; and surface stoniness in relation to landscaping. Using these criteria, the following soil types (all with 0-3 per cent slope) were found to have the fewest limitations for industrial development:

Agawam fine sandy loam
Carver coarse sand
Carver loamy coarse sand
Enfield very fine sandy loam
Gloucester loamy sand
Hinckley gravely loam sand
Merrimac fine sandy loam
Quonset sandy loam
Warwick fine sandy loam
Windsor loamy sand

The red areas of the map entitled ideal soil types for industrial use, shows the general location of these soils in the region. Soil suitability data for Easton and Avon was taken from the town's Master Plans.

Municipal Sewerage -

In areas served by municipal sewerage systems capable of handling the waste generated by an industrial park, the type of soil present is not of crucial importance. Presently, only the City of Brockton and a portion of Bridgewater has municipal sewerage. (See map after page 22) By 1980, Brockton's sewage treatment plant will be expanded and upgraded, and will handle sewage from Avon and Abington. In addition, the Old Colony Planning Council has been actively promoting a regional sewer district which would include the towns of Abington, Bridgewater, East Bridgewater, Easton, Hanson, Pembroke, West Bridgewater, and Whitman. The purpose of this sewer district would be to coordinate the planning, design and eventually the operation of a regional sewerage system.

Although it is quite possible to develop a successful industrial park without a municipal sewerage treatment system, such a park would be restricted to non-polluting establishments which use little or no water in their industrial operations. The industrial park in Avon is a good example of a successful park of this type. With a sewerage treatment system, however, an industrial park would have a great advantage in that it could attempt to attract industries from a larger pool of potential industrial users.

Ponds, Streams, Wetlands -

Another critical factor that was considered in this survey was the location of the region's watercourses and wetlands. A large portion of the land in the Old Colony region is wetland or within a flood plain where all types of development should be excluded. These areas are the most important in terms of recreation and conservation potential and are also the most susceptible to environmental pollution. The source for the information on the accompanying map was the topographic maps of the region done by the U. S. Geological Survey.

The many ponds and wetlands in this area owe their existence to the presence of glacial sheets which covered Southeastern Massachusetts about 25,000 years ago. When this ice melted, a great inland sea named the Leverett Sea by geologists, covered most of what is now the Old Colony area. Today, all that remains of the Leverett Sea is Lake Nippenicket, a shallow pond of about 350 acres in the Hockomock Swamp. When the glaciers retreated the remaining lakes began to fill with alluvial deposits and decaying plant life. These areas exist today as the various swamps and wetlands in the region such as the Hockomock and Great Cedar Swamps.

The value of these wetlands as water storage areas is incalculable. These wetland areas act as hugh reservoirs which allow rainwater and spring flood waters to build up and then slowly flow into the region's streams. If these areas were not available to store the water runoff, settlements near the flood plains of the rivers and streams in the area would be severely flooded during certain times of the year. Because of the value of these wetlands it is crucial to protect them from encroachment by development.

Major Transportation Routes -

Highways - one of the most important considerations in industrial location is the availability of good transportation routes. The major limited Access Highways in the region are Route 24, which connects Boston's Route 128 to Route 195 in Fall River; Route 3, which runs from Route 128 to Cape Cod; and Route 25, which runs from Route 24 in Raynham to Wareham.

Rail lines - Three rail lines traverse the Brockton region (see map after page 22). A line operated by the Penn Central Railroad runs from Canton south through the town of Easton. This line is operational for freight service only and stops at Easton center. South of Easton center the line is in disrepair with some bridges and sections of track missing. The Penn Central still owns the right-of-way for this southern portion.

Another line, operational for freight only, begins in the OCPC area at the Southeast corner of Avon and runs through Brockton, the eastern edge of West Bridgewater and through Bridgewater to Middleboro. A branch from this route goes to the center of East Bridgewater.

The Plymouth branch of the Old Colony line begins in the OCPC area in Abington and runs through Whitman and Hanson, just touching the southwest corner of Pembroke. This line is also operational for freight service only.

It should be pointed out that the future of these rail lines is uncertain at this point. On one hand the U.S. Department of Transportation has proposed abandoning all the rail lines in the area except the one through Brockton. The Massachusetts Department of Transportation has begun an intensive effort to halt this Federal reorganization plan.

On the other hand, the current gasoline shortage is creating public pressure to have rail service on these lines expanded to include passenger service. Selectmen from several towns in Southeastern Massachusetts have been lobbying for resoration of rail service from Boston to Cape Cod partially to give a lift to the area's sagging economy during the summer tourist season.

Solid Waste Disposal Facilities -

The existence of adequate facilities for disposing of solid waste generated by industries is very important for certain types of industries. Information concerning solid waste disposal methods and adequacy was taken from the Solid Waste Report, prepared by the Old Colony Planning Council.1 Communities are usually responsible for residential solid waste only, leaving commercial and industrial establishments to make their own arrangements for solid waste disposal. The area is fortunate in having an advanced solid waste disposal and recycling facility in the town of East Bridgewater.2 This facility is being considered as one alternative in a regional solid waste disposal plan for the Old Colony area.

Availability of other utilities -

Other than municipal sewerage, the towns seem to be about equally served by utilities such as electricity, natural gas and water. Energy costs in the region are high, but the availability of water in the area is greater than in many parts of the country. In fact, if the area can develop a dependable and abundant water supply through cooperation with the Metropolitan District Commission, or by development of ground water resources in Plymouth County, the region could gain a distinct advantage over many parts

[1]Solid Waste Report, McNiff, Alfred J., pub. by the Old Colony Planning Council, Brockton, April 1973.

[2]See "East Bridgewater Plant Shreds Garbage into Fuel", Boston Globe, March 19, 1974.

of the nation. In many areas water consumption is rapidly approaching the level where municipal water rationing may become commonplace as the result of an insufficient supply of fresh water.3

The Old Colony Water Pollution Control District -

A proposal with the potential of having a significant impact upon industrial development in the region is the Old Colony Water Pollution Control District (OCWPCD). This District is a proposed cooperative approach to the control of water pollution through the regional collection and treatment of sewage. If this District is approved by the towns involved, the OCPC area, excluding Brockton and Avon, would be served by a regional sewage collection system and a fourteen million gallon per day regional treatment plant.

As of this writing (April 1974) three communities have voted to join the OCWPC District. It is estimated that it will take a minimum of eight years before this regional facility becomes a reality. Once the program is approved, however, local communities should act quickly to set aside suitable industrial land that could be served by the regional sewerage system.

3"Depleted Water Resources May Dictate Industrial Expansion Plans", Industrial Development, Sept./Oct. 1973, pp. 18-19


N
Approximate Scale in Miles
0 1 2 4
AVON
ABINGTON
BROCKTON
WHITMAN
EMBROKE
HANSON
EAST BRIDGEWATER
EASTON
WEST BRIDGEWATER
BRIDGEWATER
18
58
28
37
123
27
24
14
53
3
106
138
104
Main Interceptors (1990)
Treatment Plant
OLD COLONY PLANNING COUNCIL
Brockton, Mass.

Existing Zoning for industrial use -

Although not always reflective of environmental and economic concerns, land presently zoned for industrial use is an important factor to consider. Existing Zoning patterns often reflect important political and economic considerations which cannot be found by examining environmental and land use factors alone.

These areas are usually those which the town is most anxious to develop. In zoning such areas, the local town boards usually take into account most of the locational factors examined in this report. The most far-sighted zoning ordinances in the area are restrictive rather than cumulative. That is, they do not permit non-industrial uses in industrially zoned areas.

A recent trend in zoning ordinances is the adoption of "performance standards" for industry. Instead of merely listing permitted industries, these newer ordinaces prescribe the maximum amount of noise, smoke, dust and other environmentally detrimental effects of industrial development. Following is a summary of the industrial zoning provisions for each town.

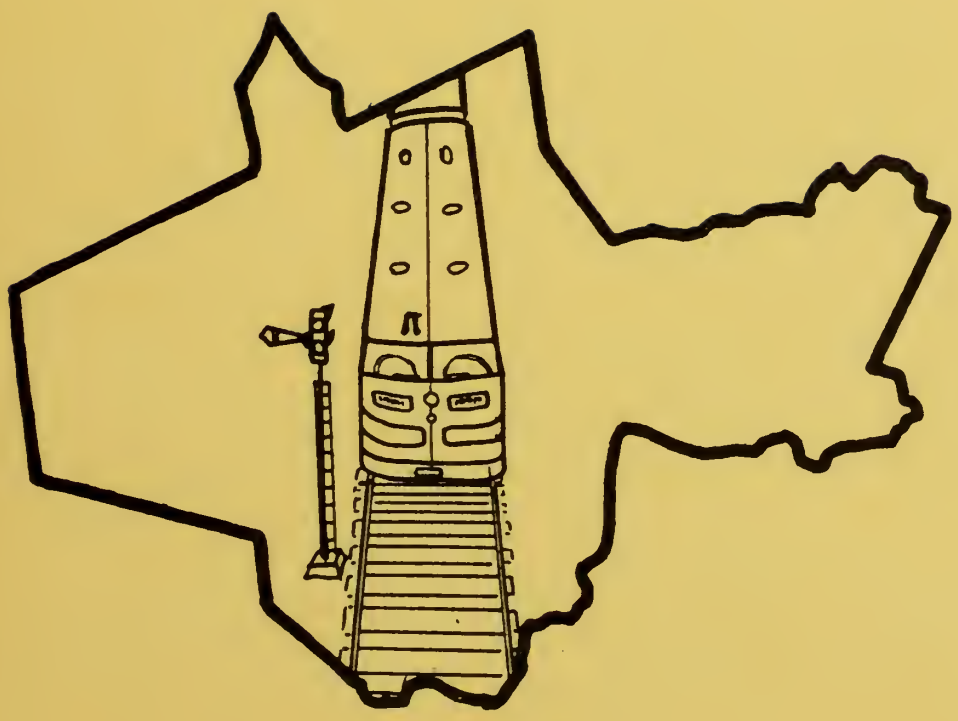
COMMUNITY INDUSTRIAL ZONING REQUIREMENTS

	Industrial Zoning District	Minimum Lot Area	Minimum Lot Width	Minimum Side Yard	Minimum Rear Yard	Minimum Front Yard	Maximum Height	Maximum Lot Coverage	Other Provisions
ABINGTON	I	That required for the intended business and its accessory uses or 20,000 sq. ft., whichever is greater	90 Ft.	25 Ft. except where fire walls are used 50 Ft. where residential district abut	Same as minimum side yard	75 Ft.	2 Stories within 100 Ft. of any residential district and no limit elsewhere	None	15 Ft. "green strip" buffer zone required from street right of way
AVON	I	40,000 Sq. Ft.	200 Ft.	25 Ft.	40 Ft.	40 Ft.	40 Ft.	50%	Zoning ordinance provides for planned industrial Districts; must be at least 15 acres.
BRIDGEWATER	I-a I-b	40,000 Sq. Ft.	200 Ft.	25 Ft.	40 Ft.	40 Ft.	40 Ft.	25%	I-A Permits commercial, small retail business uses, I-B limited to industrial, wholesale uses.
BROCKTON	I 1 2 3	None None None	None None None	None, except abutting residential zones, then 10 feet	None except, abutting residential zones, then 25 for I-1, 35 for I-2 and I-3	50 Ft. 20 Ft. 20 Ft.	3 Stories or 40 Ft. I-1 5 Stories or 60 Ft. I-2, I-3	50% I-1, 75% I-2, and I-3	
EAST BRIDGEWATER	I	None	None	50 Ft. where it abuts residential district	50 Ft. except for building extending throught a block	50 Ft.	2 Stories or 40 Ft.	None	
EASTON	I	40,000 Sq. Ft.	150 Ft.	25 Ft	40 Ft.	50 Ft.	3 Stories (40 Ft.)	To be individually determined by Planning and Zoning board	
HANSON	comm. – indus.	None	None	100 Ft.	100 Ft.	50 Ft.	40 Ft.	25%	
PEMBROKE	I	80,000 Sq. Ft.	200 Ft.	15 Ft.	15 Ft.	15 Ft.		50%	Buffer Zone - no structure in this (industrial) district shall be placed within 100 feet of any residentially zoned area or of any existing residential use.
WEST BRIDGEWATER	I	2 Acres	250 Ft.	40 Ft.	40 Ft.	50 Ft.		25%	Except in special cases where 35% coverage may be permitted.
WHITMAN	LI	10,000 Sq. Ft.	90 Ft.	25 Ft.	50 Ft.	50 Ft.	3 Stories or 45 Ft.	None	
	I	10,000 Sq. Ft.	90 Ft.	20 Ft.	40 Ft.	30 Ft.	3 Stories or 45 Ft.	None	

Community Facilities and Amenities -

All the OCPC Communities have adequate fire and police facilities. Differences in levels of service would depend upon the distance of specific sites from municipal fire and police stations. For an inventory of municipal facilities and services provided by towns in the Old Colony area see the report entitled, Community Facilities, published by the Old Colony Planning Council in 1973. The presence of institutions of higher learning is considered to be of significant importance to many firms. Such institutions in the area include Stonehill College in Easton, Bridgewater State College in Bridgewater and Massasoit College in Brockton. Hospitals in the area are the Cardinal Cushing Hospital, Veterans Administration Hospital, Brockton Hospital, Goddard Memorial Hospital and Plymouth County Hospital.

methodology for evaluating potential regional sites



Methodology -

The initial site selection process included broad considerations of soil type, transportation, zoning and environmental considerations. By discussing these and other factors with the local industrial development commissions the choice for regional sites was narrowed down to a few large parcels. All of the first group of sites chosen meet the criteria of having suitable soil types, good transportation connections, and are in most cases wholly or partially zoned for industry. From this list it was necessary to pick two or three sites that would be most suitable for a large regional industrial park. For this purpose site selection evaluation criteria were developed, based on factors considering differences among specific sites.

As mentioned in the introduction, a problem with developing site selection criteria is that the most critical locational factors considered by industry are regional in nature. Many regional economists suggest that the selection of a specific site should be made only after an area has been chosen for relocation.

> More mistakes are made because of the temptation of a fine site or attractive building than any other single phase of plant location engineering. An investigation of the specific site is recommended only after a community has been chosen that combines the most favorable economic features. Rarely is it necessary to reject a community because of the lack of sites - especially with the definite trend toward peripheral rather than central city operations.[1]

In a business survey done in 1969, access to markets was considered to be the most important factor by 52 per cent of the businessmen interviewed. In addition, another 13 per cent listed anticipation of growth of markets as the most important factor. Although the Old Colony area is attractive to businesses in terms of these factors, because of the proxmity of the area to greater Boston and the phenomenal population growth taking place in the region, they apply more or less equally to all the communities considered in this survey. Local considerations such as "ease of attracting out of area personnel" and "community facilities" were considered to be the most influential factors by a significant number of respondents.

[1]Yaseen, Leonard, Plant Location, American Research Council, New York, 1956.

[2]Karaska, Gerald and David F. Branhall, eds. Locational Analysis for Manufacturing, Regional Science Studies series 7, M.I.T. Press, Cambridge, 1969.

Percentage of firms citing various factors as the most influential in their industrial location.3

1.	Access to Markets	51.9
2.	Anticipation of growth of markets	12.8
3.	Amicable labor relations	1.7
4.	Lower wages	2.6
5.	Ease of attracting out-of-area personnel	4.7
6.	Low freight cost on obtaining raw materials and components	7.7
7.	Low freight cost on shipping final product	10.7
8.	Climate, as it affects operations	1.8
9.	Community facilities (education, police etc.)	2.9
10.	All other factors	3.2
		100%

Two of the most important factors considered by industry are labor force characteristics and access to markets. This information, since these factors are more or less equal in the Old Colony area, is summarized in the appendix to this report. Other criteria considered in specific site selection are explained below.

Critical Considerations

1. Transportation Access -

As mentioned previously, the only limited access highways in the area are Route 24 and Route 3. Several rail lines traverse the area but service is limited. Boston is the only city linked to the Brockton area rail lines. There is no rail service to major cities to the South or East of Brockton.

Route 24 provides a direct link between Brockton and Boston, New Bedford, Fall River and an indirect link to Providence, Rhode Island. Route 3 links the eastern portion of the Old Colony area to Boston and Cape Cod.

Because of the overwhelming economic importance of major highways and because of the general decline of rail service in the area, it was considered to be relatively more important that an industrial park be located near one of the major highways. This is not to say that future developments such as a continuation or worsening of the current fuel shortage could not make rail service at least as important economically as highways in the future.

2. Site Size -

The following minimum acreage is recommended for a preplanned industrial complex. (Source: Planning Design Criteria, by Lee Koppelman and Joseph DeChiara, p. 247).

Minimum - 320 acres
Ideal - 640 acres

[3]Karaska, Gerald and David F. Branhall, eds. Locational Analysis for Manufacturing, Regional Science Studies series 7, M.I.T. Press, Cambridge 1969.

Koppelman and DeChiara also recommend reserve land for a minimum of 50 years future growth. While these standards are not meant to be hard and fast rules, a regional industrial park for the Old Colony area should at least approach the minimum suggested size. In addition to the area immediately available for development, there should be additional land available for expansion at a later date.

3. Soil Characteristics or Availability of Public Sewerage -

The major environmental concern in evaluating new development projects is the effect that project will have on the surrounding streams and wetlands and on the area's water table. To avoid environmental pollution of these areas it is necessary to build only on suitably drained soils or on areas served by sewage treatment systems.

Other Important Considerations

4. Adjacent Land Use -

One of the most important considerations in locating an industrial park, is to insure that the proposed site does not encroach upon residential or other incompatible land uses. This involves not only the locating of the industrial park itself but also the types of industries located within the park. Obviously, the recommendation of specific standards for industrial performance is beyond the scope of this report. It should be assumed, however, that at least a minimal amount of air pollution, noise, and traffic congestion will occur in any sizable industrial complex. Consequently, the character of existing land uses surrounding a proposed industrial site is an important consideration in evaluating its potential for success.

This consideration applies not only to encroachment upon residential areas but also upon environmentally critical zones such as rivers, and wetlands. Preserving environmental integrity in an area, as in preserving the quality of residential neighborhoods, depends upon the types of industries permitted as much as upon the location of the park itself.

5. Local Zoning -

Land zoned by local communities for industrial use does not always represent the most suitable land available for this use. It is also true that many communities have good land available for industrial use that is zoned for other purposes. Land already zoned for industry does, however, have some obvious advantages. The main advantage of course, is that the problem of going through the process of obtaining zoning changes or variances is avoided. Secondly, land zoned for industrial use usually, though certainly not always, indicates that obnoxious external effects on neighboring non-industrial land use will be minimal.

6. Availability of Water -

The availability of a dependable water supply is a necessary requirement of an industrial park. All the sites considered in this survey have access to a municipal water supply. More detailed information such as service main size and specific locations are given for individual sites in the final section of the report.

7. Site Topography -

Site topography refers to the general suitability of the site for development. Considerations here include the presence of wetlands and where they are located within the site, degree of slope of the site and the general condition of the land (for example, some of the sites have been used for gravel excavation and would be costly to develop).

8. Other Environmental Considerations -

Obviously, environmental quality is a factor to some extent in all of the considerations discussed above. However, environmental protection is such a key issue that it warrants treatment as a separate issue. Considerations here include, nearness to wetlands, ponds and streams, nearness to other ecologically sensitive areas such as wildlife preserves, town forests etc., and the feasibility on each site of buffer zones to separate the area of industrial development from adjoining incompatible uses.

9. Community Amenities -

Included here are considerations that effect the quality of life in each community. In general, the entire OCPC area is characterized by pleasant residential communities with ample amounts of open space and recreational opportunities. Communities with particular advantages include those with colleges, outstanding cultural attractions, and outstanding recreational facilities.

RATING SYSTEM

In developing a rating system for the sites each factor was weighted in terms of its relative importance for site selection. For each site, the adequacy of each factor was rated on a scale of 0-4. The various criteria used, the weight given to each criteria and the rating system is given on the following page.

Because of its critical importance the nearness of the site for major highway was considered to be the most important factor. The other two major factors were site size, (300 acres was considered to be the minimum adequate size), and the presence of sewers or good soil suitability (particularly critical in the OCPC area because of the presence of so many large wetland areas).

7x	Highway Transportation	ratings (0-4) will
5x	Site Size	be given to each site
5x	Public Sewers or	for each criterion
	Soil suitability if no	
	municipal sewerage	0-Poor
		1-Marginal
3x	Rail Transportation	2-adequate
3x	Public water on site	3-good
3x	Site topography	4-excellent
3x	Adjacent land use	
2x	Existing zoning	
2x	Community amenities	
2x	Other environmental considerations	

For each site rated, the weighted number assigned to each criterion is multiplied by the corresponding rating given for that site. By adding the scores for each criterion a total numerical score is obtained for each site. The sites with the highest scores are those most suitable for regional industrial development according to the criteria used.

INDUSTRIAL LOCATION CONSIDERATIONS

AVON
ABINGTON
BROCKTON
EASTON
WHITMAN
HANSON
PEMBROKE
WEST BRIDGEWATER
EAST BRIDGEWATER
BRIDGEWATER

LEGEND

- Industrially zoned land
- Wetlands
- Streams & ponds
- Sewer service area
- Ideal soil types for industrial site

NORTH

OLD COLONY PLANNING COUNCIL

SCALE IN MILES
0 1 2 3 4

inventory of selected regional sites

LOCATING POTENTIAL SITES:

After the initial methodology was established and the general survey of the region was completed, a series of meetings were held with members of the local industrial development commissions and other town officials. These meetings proved to be a valuable source of information concerning local attitudes, ownership patterns and the availability of relatively large tracts of land in the towns.

Although the focus of the conversations with the industrial development commissions centered around the industrially-zoned areas in the towns, all areas with a potential for industrial development were examined. All areas with suitable soil types, good transportation access and all large, vacant pieces of land were examined. As might be expected much of the best land for industrial development has already been used for residential or other development purposes. Many of the remaining large undeveloped areas are environmentally unsuitable for industrial use. In spite of this, several possible regional industrial sites were found. Following is a summary of the information obtained for each community from various local officials and town documents. Once again, it should be pointed out that this is not an exclusive list of industrial sites in the area. There are many sites not mentioned here which would be appropriate for community industrial/commercial centers but would not be suitable for large scale regional industrial use.

ABINGTON:

Abington, like the City of Brockton, is heavily settled,with few remaining large open spaces suitable for building. Abington is also faced with the additional constraint of a high water table throughout much of the town. The limited availability of suitable land in the town, coupled with the lack of access to major highways has severely hampered the town's ability to attract industry. One of the few major attractions the town holds for industry is the presence of the Old Colony railroad line running from Boston to Plymouth. It is on this rail line that the town's best industrial site is located.

In the northeastern part of the town there is a small parcel of industrially-zoned land that could be used for a small industrial park. The land is only 51 acres in size, but an additional 45 acres could possibly be added to the parcel. Some of the land appears to have been used for gravel extraction and would require extensive preparation for industrial building. The area is served by town water but there are no public sewers. There are no good direct routes to highways 24 or 3.

This area does not seem to be suitable for a regional industrial park because of its insufficient size and lack of good highway access. It should be considered, however, for some sort of small scale industrial or commercial use.

There do not appear to be any other large suitable areas in the town for industrial use. Much of the northwestern portion of the town is taken up by Ames Nowell State Park. Most of the other suitable areas in the town and many unsuitable areas are already developed for residential or commercial use. The remaining undeveloped land in the town is too wet for intensive development. A recently completed flood plain study found that almost 45 per cent of the town is unsuitable for even limited development, largely because of the extensive wetland areas in the town.

AVON:

Avon's location on Route 24 has made it possible for the town to establish one of the most successful industrial parks in the region. This park, now approximately 150 acres in size is being expanded to include about 150 additional acres in the north central part of the town. It has been estimated that the industrial park has added ten million dollars of taxable property to the town's tax roll and has created some 700 new jobs.

Aside from the area already being developed for industry in Avon, there are no other suitable sites for a regional industrial park. The only other largely vacant portion of the town is a fairly large area in the northeast portion of the town. Much of this land is wet and the remaining portion is too small for an industrial area. The other industrially zoned portion of the town, a section in the southeastern corner, near the Brockton line, is largely too wet for development. More importantly, four of the town's five wells are located here, making the protection of this area from environmental pollution a critical concern. It is unlikely, therefore, that this area would be considered for major industrial development.

BRIDGEWATER:

Several large areas of land wholly or partially zoned for industry exist in the town of Bridgewater. These areas include a parcel of land on the Matfield River near Mill Street, an area on the Taunton River fronting on Plymouth Street, and an area on Bedford Street just South of Flagg Street.

A large area on Pine Street near Route 24 seems to have a good potential for a regional industrial park (indicated on the map below as site #1). A large portion of the site contains suitable soils types for industrial development. About one-half of the area of the site is presently zoned for industry, the other half being zoned residential, although it is largely uninhabited. Total size of the area is about 700 to 800 acres.

There is a need for an access road to open up the site. With the recent designation of the Brockton SMSA as a "title IV" area, which designates the areas as being one of substantial and persistent unemployment, more Federal Funds should be available to develop industrial park sites.

The land composing the site is not owned by an inordinate number of persons. It should be possible to assemble a large package of land for a regional industrial facility without dealing with a great number of small owners. Town water is available at the site. Bridgewater has a small municipal sewerage system but it does not serve this area.

Another potential industrial site is located north of route 104, just east of route 24 (indicated on the map as site #2). Part of the land is zoned for industrial use and part for residential use. A portion of the frontage on route 104 is zoned Business - B. The distance from the frontage on route 104 to route 24 is approximately one mile. There are quite a number of residences on this road between the site entrance and route 24.

Much of the north and western area of the site north of route 104 is wetlands, which form a portion of the Hockomock Swamp. East of this swampy area a large portion of the site has good soil suitability for on site commercial/industrial sewage disposal. The topography of the site appears to be excellent for development. The land is cleared and very level, with a few gently rolling hills. A small stream runs through the eastern portion of site. There appears to be about 700 acres suitable for development. The area is supplied with municipal water. Bridgewater's sewerage system does not serve this area.

BROCKTON:

As one might expect in area as densely settled as Brockton, there are few good sites in the City for industrial development. Most of the sites that exist are under 50 acres in size, much too small for a regional industrial park.

Brockton Industrial Park - This park, located on West Chestnut Street, contains several major industries and warehouses. The largest remaining tract is a city owned parcel of approximately 45 acres, which is being developed by the city through an Economic Development Administration Public Works improvement project grant. Other remaining parcels of the land are very small.

Brockton Freight Yard - Several warehouses and other rail-oriented enterprises are located in this industrial area near Elliot Street. A 40 acre site is available here but once again this is too small for an industrial park site.

In the southern part of the town near Oak Hill Way and the railroad track, there exists two areas totaling approximately 100 acres. The advantage of this site is that it borders on potential industrial land in the town of West Bridgewater. (See discussion of potential sites in West Bridgewater). The disadvantages of the site are the lack of adequate access to Route 24 (see map after page 22) and the small potential size of an industrial park in the area. If this site proves to be unsuitable for a regional industrial park it should certainly be considered for industrial use by the City of Brockton and the town of West Bridgewater. The site is served by public water and sewerage from the City of Brockton.

The possibility of extending Oak Hill Way through another area of industrially zoned land to create an entrance on Route 28, (Main St.) has been considered. This would open up much more prime industrial land and would give the whole park better access by truck. The major problem with this proposal is the cost. A 3000 foot road would have to be constructed, plus a bridge crossing the Salisbury Plain River. The result would be truck access to Route 28, which, although an improvement over the existing situation, would still not offer good access to Route 24.

EAST BRIDGEWATER:

The Town of East Bridgewater, although it is not intersected by a major limited access highway, has a few good industrial areas. There is an area in the northeast section of the town of about 400 acres zoned for industrial use. Another industrially zoned area is located in the southwestern corner of the town on route 106. This area is served by a line of the Penn Central railroad. There do not seem to be any other large areas in the town, industrially zoned or otherwise, with the potential for development as an industrial park.

The site in the northeastern part of the town fronts on Oak Street and is bisected by Central Street. The greatest deficiency of the site is the lack of good highway access. The nearest major highway is route 24. To reach this highway it would be necessary to take a roundabout way to route 106 and then to highway 24. There is no rail line near the site. A substantial portion of the site has soil types suitable for industrial use with on site sewerage. The site is supplied with municipal water. In view of the very poor access to a major highway and the lack of rail transportation it does not seem worthwhile to consider this area for a regional industrial site.

The site in the southwestern part of East Bridgewater is located on route 106. The area is served by a rail line and a rail spur. Although there is presently no municipal sewerage in East Bridgewater, the proposed Old Colony Sewer District plan would include a major interceptor very near this industrial area. Although route 106 goes directly to Route 24 it does not offer particularly good access to this highway. It is approximately three miles to route 24 from the site along a fairly congested portion of route 106. The area is adequately served by municipal water. There are a substantial number of residences in the area which could create a problem if any more heavy trucks use the area. Much of this site is already filled with industrial users. There are approximately 150 to 200 contiguous acres suitable for development.

EASTON:

The town of Easton, like many other communities in the Old Colony area has several large wetland areas within its borders. The Hockomock Swamp, one of the most environmentally unique areas

in the northeast, is partially located in the southeastern portion of the town. Several other wetland areas, small streams and ponds are scattered throughout the town. Major transportation routes are route 24 which parallels Easton's eastern border just outside the town limits, and route 95 which is located about 4 1/2 miles to the west of the town.

Easton's zoning map was revised in March 1973 based largely upon an extensive survey of the town done by Metcalf and Eddy, Inc. in conjunction with a Master Plan for the town. There are two major areas in the town zoned for industrial use.

One of these areas lies south of Belmont Street (route 123) bordering the City of Brockton. The advantage of this site is its nearness to Route 24. Its disadvantages as a regional industrial park are that much of the land is wet and that there are many residential areas surrounding the industrially zoned area. Its proximity to the Brockton industrial park, however, might permit the industrial use of some of the land near the Brockton border. Better access to the land is needed, possibly from Turnpike Street in West Bridgewater or West Chestnut Street in Brockton. A sand and gravel company is located in this area.

Another more promising area lies along Route 106 in the western part of town on the Mansfield border. This area is approximately 400 acres in size. Most of the land is suitable except for an area surrounding a small stream in the center of the parcel. The land is located about 4 1/2 miles from route 24 and also about 4 1/2 miles from route 95, the major limited access highway on the East coast. An 8" water main serves the area. A major liquid natural gas supply depot is directly across route 106 from the site. There are no town sewers in Easton.

There are a number of owners of the industrially zoned land. Since many of the parcels are land locked, members of the Industrial Development Commission felt that a large parcel of land could be assembled at a very reasonable price.

HANSON:

Suitable land in Hanson for industrial use is severely restricted by two important factors, the lack of access to a major highway and the generally swampy character of much of the town.

The industrially zoned land in Hanson is confined to a section in the southwestern portion of the town adjoining the railroad track.

The section zoned for industry is generally suitable for development except for a certain amount of wetlands surrounding Poor Meadow Brook. The remainder of the area has several areas of good soil types for commercial and industrial on-site sewerage. The area is generally open with some residences on Main Street and West Washington Street. The area was zoned for industrial use because of the Old Colony Railroad Line which provides freight service between Boston and Plymouth. Existing industries include the Ocean Spray Cranberry Company, and a light fixture manufacturing company. There

appears to be 400 to 500 acres of dry, industrially zoned land.

A portion of this industrially zoned area has been cleared by the Hanson Industrial Corporation with the hope of attracting industrial users. Although inquiries have been made about the park, no industries have located there as yet.

Another large portion of the industrial area is in the process of being taken by the town through tax title proceedings. If the town gains ownership of this land the possibility of using it for an industrial park site should be considered. The town should, of course, look at other options such as using the land for a school site, or for conservation, or recreation purposes.

Although the industrial area has poor highway access, the site represents one of the largest acreages of undeveloped land near a rail line in the OCPC area. The town might be able to attract one or two large rail-oriented industrial users to the area if the town's advantages can be emphasized.

To the South and West of this industrially zoned area much of the land is very swampy and unsuitable for development. In the northern part of the town there is a lack of good transportation access as well as many environmentally critical streams, ponds and wetland. Aside from the industrial area mentioned above there do no seem to be any other potential industrial sites in the town.

PEMBROKE:

The town of Pembroke, like many other OCPC communities, still retains much of its rural character. The town is characterized by small village type settlements. Many large ponds, streams and wetland areas are present in the town. The major incentive to industrial development in Pembroke is the presence of Route 3, a major limited access highway linking the town to Boston to the north and Plymouth - Cape Cod to the south.

From discussions with the Pembroke Industrial Development Commission the best site in the town for a regional industrial park appears to be an area surrounding the Route 3 interchange in the northeast corner of the town. About 300 acres of land there is zoned for industrial use. A portion of the land is currently occupied by industrial users.

Although there are no areas of the site with "slight" soil limitations for industrial on-site sewage disposal, according to the generalized soil maps some of the land has only "moderate" limitations for this type development. A portion of this area, to the east of Oak Street, has evidently been used for gravel extraction. This portion of the site would probably be very costly to prepare for industrial use.

Most of this industrially zoned area is served by municipal water. The only area without town water is that portion of the site east of route 3. This area could easily be supplied with water, however, either by drilling wells or by extending the municipal system under route 3. There are some small businesses

along route 139 (Church St.) and along part of Oak Street. The topography of the land is good. The area is dry except for the southern edge of the site near Pudding Brook.

There do not appear to be other areas in the town suitable for a large industrial park. The other large vacant areas in the town, for the most part, are unsuitable for industrial use because of the presence of streams and wetlands, because of incompatible residential development, or because of inadequate highway access for large trucks.

WEST BRIDGEWATER:

Available industrially zoned land in West Bridgewater centers around Route 24, the major limited access highway in the region. Several large parcels exist near Route 24 in the north portion of the town. The soil types found in the area are generally suitable for industrial building.

Access from Manley Street to Route 24 is via Route 106 in West Bridgewater or Route 27 in Brockton. Present industrial development on Manley Street includes several warehouses and small manufacturing firms. Available parcels for industrial development range in size from about 40 to 100 acres. The total amount of contiguous acreage, owned by three or four individuals is about 250 acres.

There is a 12 inch water main running up Manley Street to Walnut Street. There is no municipal sewerage in West Bridgewater. A sewerage line in the City of Brockton on West Chestnut Street does come almost to this area of West Bridgewater.

The town of West Bridgewater owns a small parcel of land, about 50 acres, in the Northeast part of town adjacent to the railroad line. This site offers some potential for development if expanded. It might be possible to develop a rail oriented industrial park here in conjunction with the towns of East Bridgewater and Brockton. The assets and liabilities of this area were discussed in the Brockton section of this inventory.

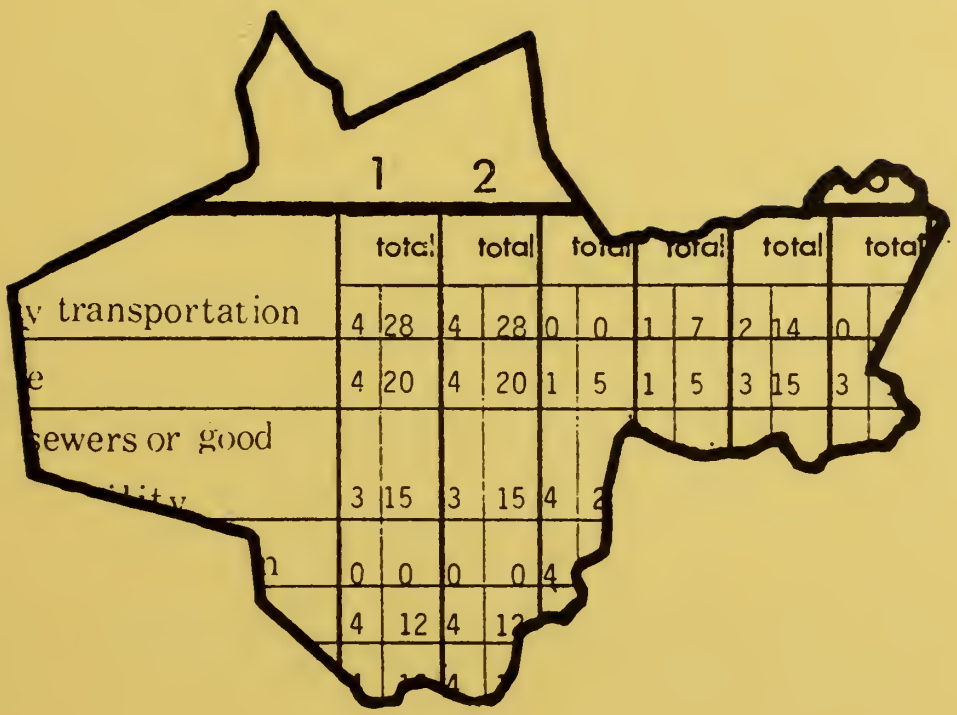
Aside from these areas there do not appear to be any other suitable sites for industrial development. South of route 106 in the western part of the town, the Hockomock Swamp begins. Suitable land in the north central part of the town is taken up by the State Forest. The other remaining large undeveloped areas are either wetlands or have inadequate access to Route 24.

WHITMAN -

The town of Whitman is characterized by a high water table varying, according to the season, from just a few inches to two or three feet below the surface. According to a study done for the town in 1961, this high water table is caused by a stratum of densely compacted silt, impervious to water, which lies anywhere from two to twenty feet below the surface of the ground throughout the town. The report concluded that the soils of Whitman are generally not conducive to individual sewage disposal facilities.

In addition to this natural barrier to growth there is also the problem of the lack of large areas of undeveloped land in the town. Of the OCPC communities only Avon is smaller in land area, and only Brockton has a greater density per square mile. According to members of the industrial development commission there are no large areas in the town which would be suitable for a regional industrial park. In fact, the town could have difficulty in finding smaller community oriented industrial/commercial centers.

application of site selection criteria



From the review of the potential industrial areas described in the previous chapter, the sites that seemed to be the most suitable were rated according to the methodology described in chapter 3. The evaluation of these sites is described briefly below. The numerical evaluation follows this description.

1 Bridgewater, site #1 - Located just south of route 104 near route 24, this site appears to have excellent potential for a regional planned industrial park. The site's major advantages are its large size and its nearness to route 24. Its major disadvantage is the general unsuitability of Pine Street for a heavily used industrial road.

2 Bridgewater, site #2 - This site has the same advantages as Bridgewater, site #1, except that access is slightly better from this site to route 24. The site's disadvantages include the presence of wetlands in the northern portion of the site, and the creation of a potentially dangerous intersection on route 104.

3 Southeast Brockton - The major advantages of this site are the presence of a rail line, the fact that the area is already characterized by industrial use, and the presence of municipal sewerage. The major disadvantage is the lack of good highway access.

4 Southwest East Bridgewater - This site's advantage lies in the fact that it is on a rail line and is also fairly near a major highway. The major disadvantages are the presence of residential areas within the industrial area and the fact that much of the industrially zoned land is occupied, leaving a fairly small area for development as a regional park.

5 Easton - This site has the advantage of being near both routes 24 and 95. The size of the site and its level topography are also advantages. Its disadvantages are the presence of a fairly large wet area in the center of site and the general unsuitability for industrial traffic of route 106 between the site and route 24.

6 Hanson - The major disadvantage of this site is its distance from a major highway. Its advantages include its large size and the presence of a rail line. A large portion of the site has good soil types for industrial on-site sewage disposal.

7 Pembroke - The major advantage of this site is its location on route 3, a major limited access highway. The major disadvantage is the relatively small amount of land available for a regional planned industrial park.

8 West Bridgewater - This site's major advantage is its location on route 24. The major disadvantage is the site's relatively small size compared to other nearby sites.

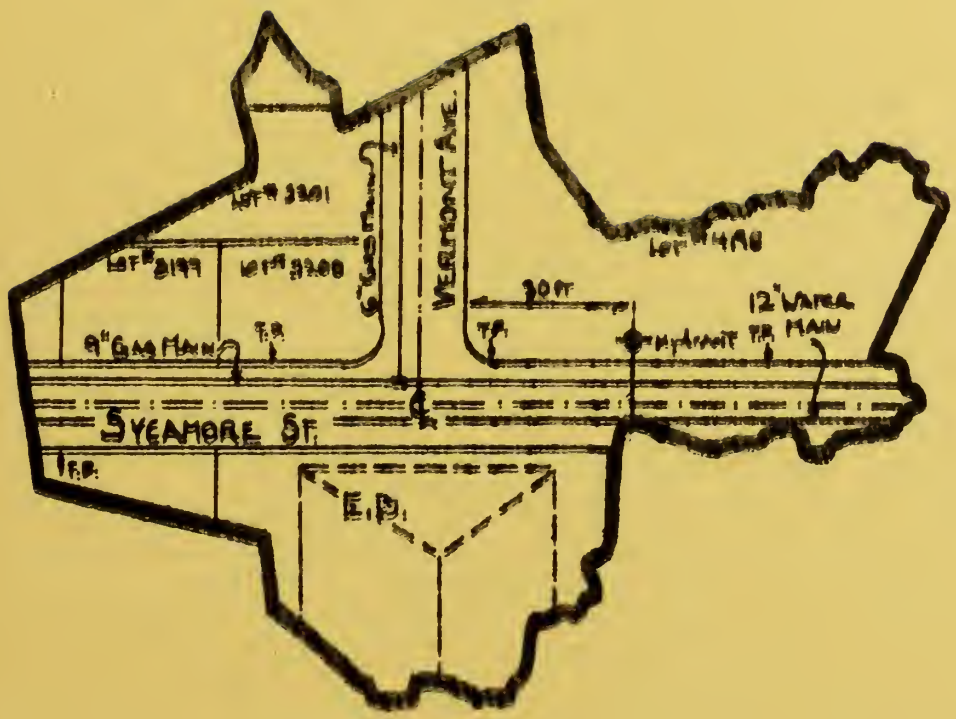
SITE SELECTION METHODOLOGY

Criteria & Weight	Site number 1		2		3		4		5		6		7		8	
		total		total		total		total		total		total		total		total
7X Highway transportation	4	28	4	28	0	0	1	7	2	14	0	0	4	28	4	28
5X Site size	4	20	4	20	1	5	1	5	3	15	3	15	1	5	2	10
5X Public sewers or good Soil suitability	3	15	3	15	4	20	3	15	3	15	3	15	2	10	3	15
3X Rail transportation	0	0	0	0	4	12	4	12	1	3	4	12	0	0	1	3
3X Public water on site	4	12	4	12	4	12	4	12	4	12	4	12	4	12	4	12
3X Site topography	4	12	4	12	3	9	3	9	3	9	3	9	2	6	2	6
3X Adjacent land use	3	9	3	9	3	9	2	6	3	9	4	12	3	9	3	9
3X Existing zoning	3	9	3	9	4	12	4	12	4	12	4	12	4	12	4	12
2X Community amenities	4	8	4	8	3	6	4	8	4	8	4	8	4	8	4	8
2X Other environmental considerations	3	6	4	8	4	8	1	2	2	4	3	6	2	4	2	4
Total score (Sum of rating x criteria)	119		121		93		88		101		101		94		107	

Rating System

0 poor
1 marginal
2 adequate
3 good
4 excellent

description of regional industrial sites



AVON

ABINGTON

WHITMAN

BROCKTON

EASTON

HANSON

PEMBROKE

WEST BRIDGEWATER

EAST BRIDGEWATER

BRIDGEWATER

REGIONAL

INDUSTRIAL SITES

NORTH

OLD COLONY
PLANNING COUNCIL

SCALE IN MILES

0 1 2 3 4

Bridgewater #1 Description

Location:

Distance to Bridgewater center	=	2.5 miles
Distance to Brockton	=	8 miles
Distance to Boston	=	30 miles
Distance to Fall River	=	18 miles

Transportation: Access to Route 24, the nearest major limited access highway is via Pine Street and route 104 (Pleasant Street). The distance to 104 along Pine Street from the site is about .2 miles. The distance from the intersection of Pine Street and 104 to Route 24 is approximately 1 mile.

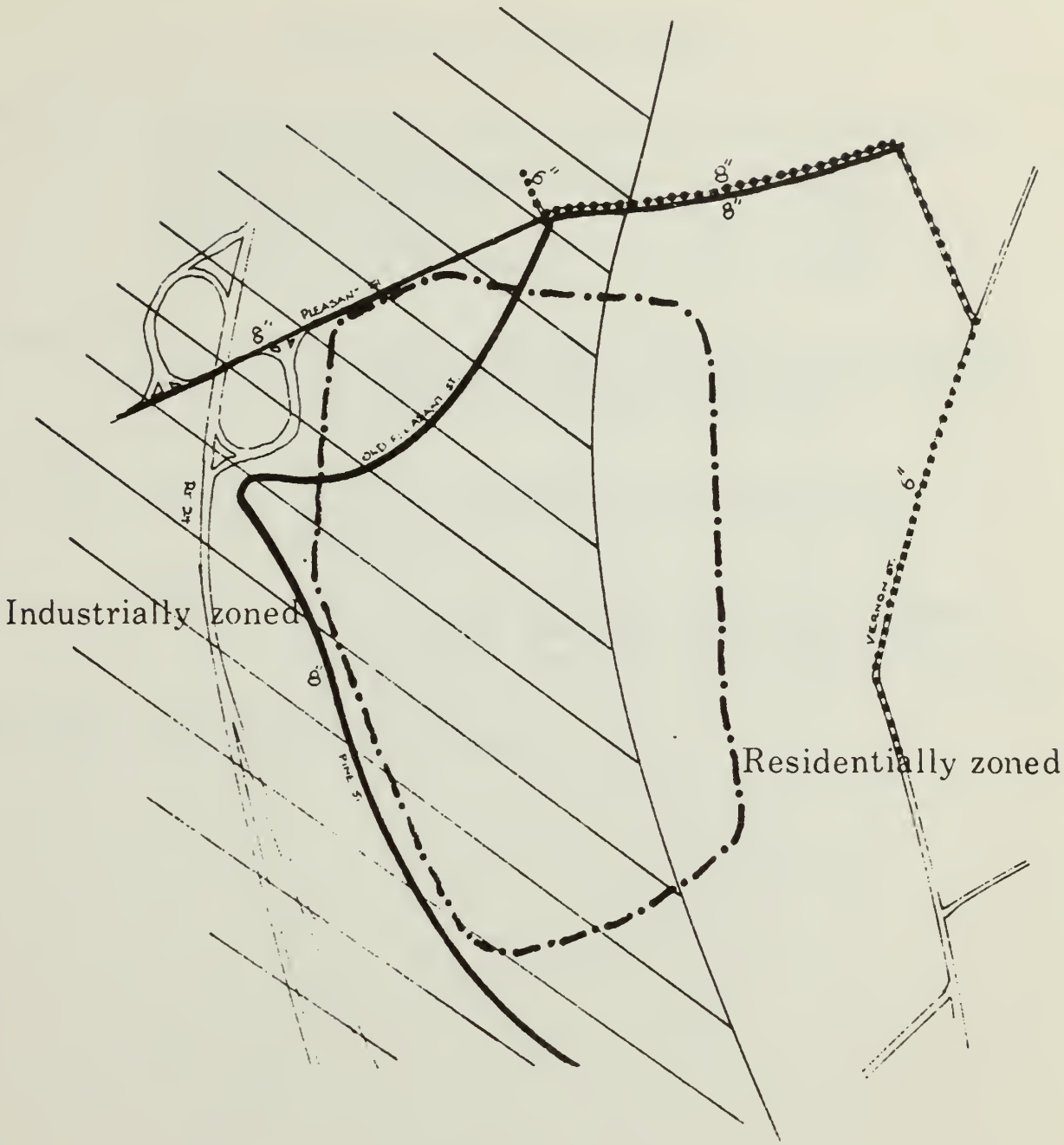
Utilities:

Water: Served by 12" main along route 104, supplies by the Town of Bridgewater water department.

Gas: Served by the Brockton-Taunton Gas Company. An 8" main runs along route 104 to the intersection of Pine Street and 104, and a 6" main is located to the east of the site along Vernon Street.

Site size: Approximately 700 acres

Bridgewater *1



gas main

approximate outline of potential site

water main

Bridgewater #2 Description

Location: Located north of route 104 approximately one mile east of route 24.

Distance to Bridgewater center	=	2.5 miles
Distance to Brockton	=	8 miles
Distance to Boston	=	30 miles
Distance to Fall River	=	18 miles

Transportation: Major highway access is to route 24 via route 104. The distance from the entrance to the site on route 104 to Route 24 is about one mile.

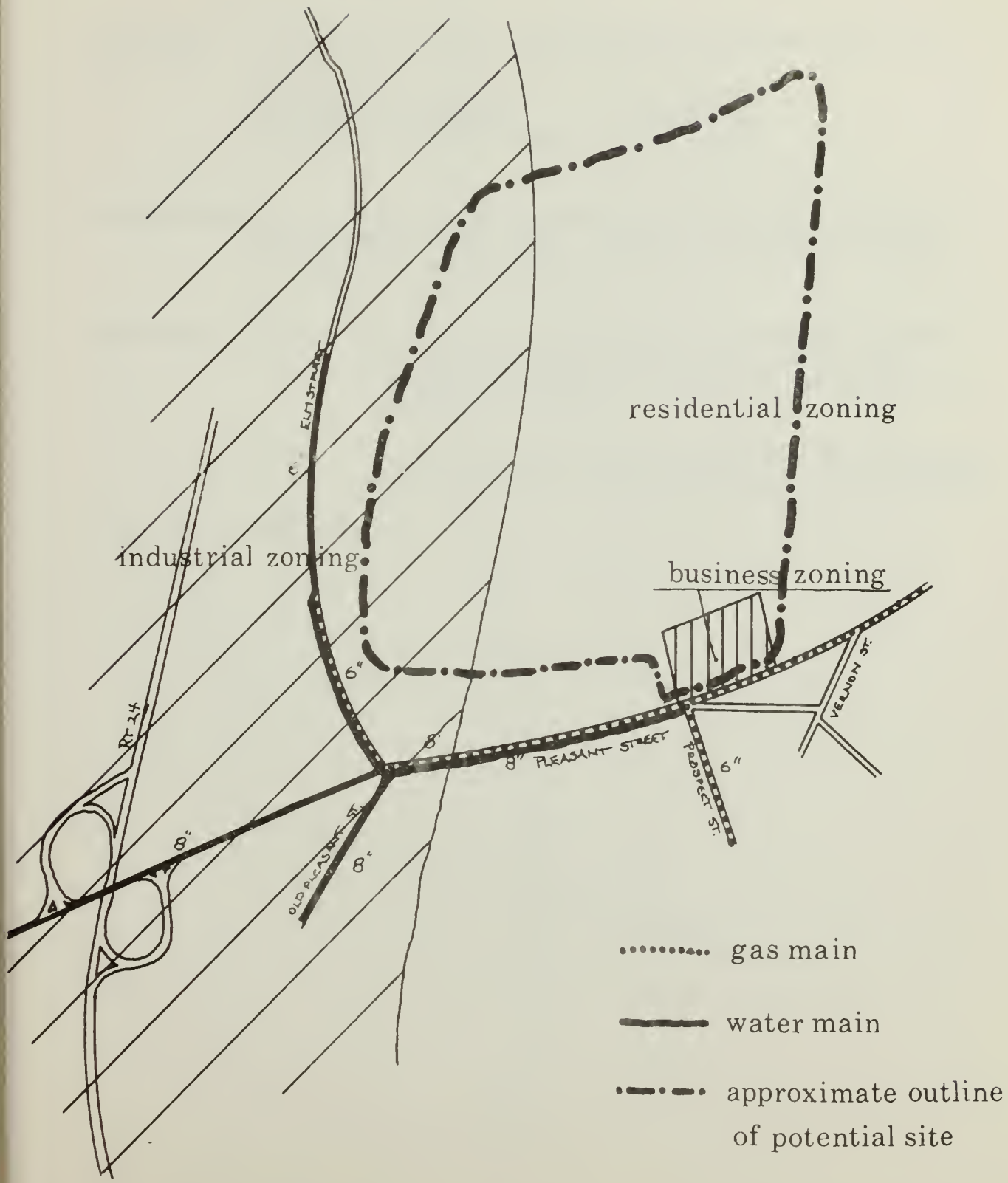
Utilities:

Water: Town of Bridgewater water department. The site is served by a 12' main along route 104.

Gas: Served by the Brockton-Taunton Gas Company. An 8" natural gas main runs along route 104 and turns down Elm Street where it becomes a 6" main.

Site size: Approximately 600 acres

Bridgewater * 2



West Bridgewater Site Description

Location: Located on both sides of Manley Street north of route 106.

Distance to Brockton	= 3 miles
Distance to Boston	= 25 miles
Distance to Fall River	= 23 miles

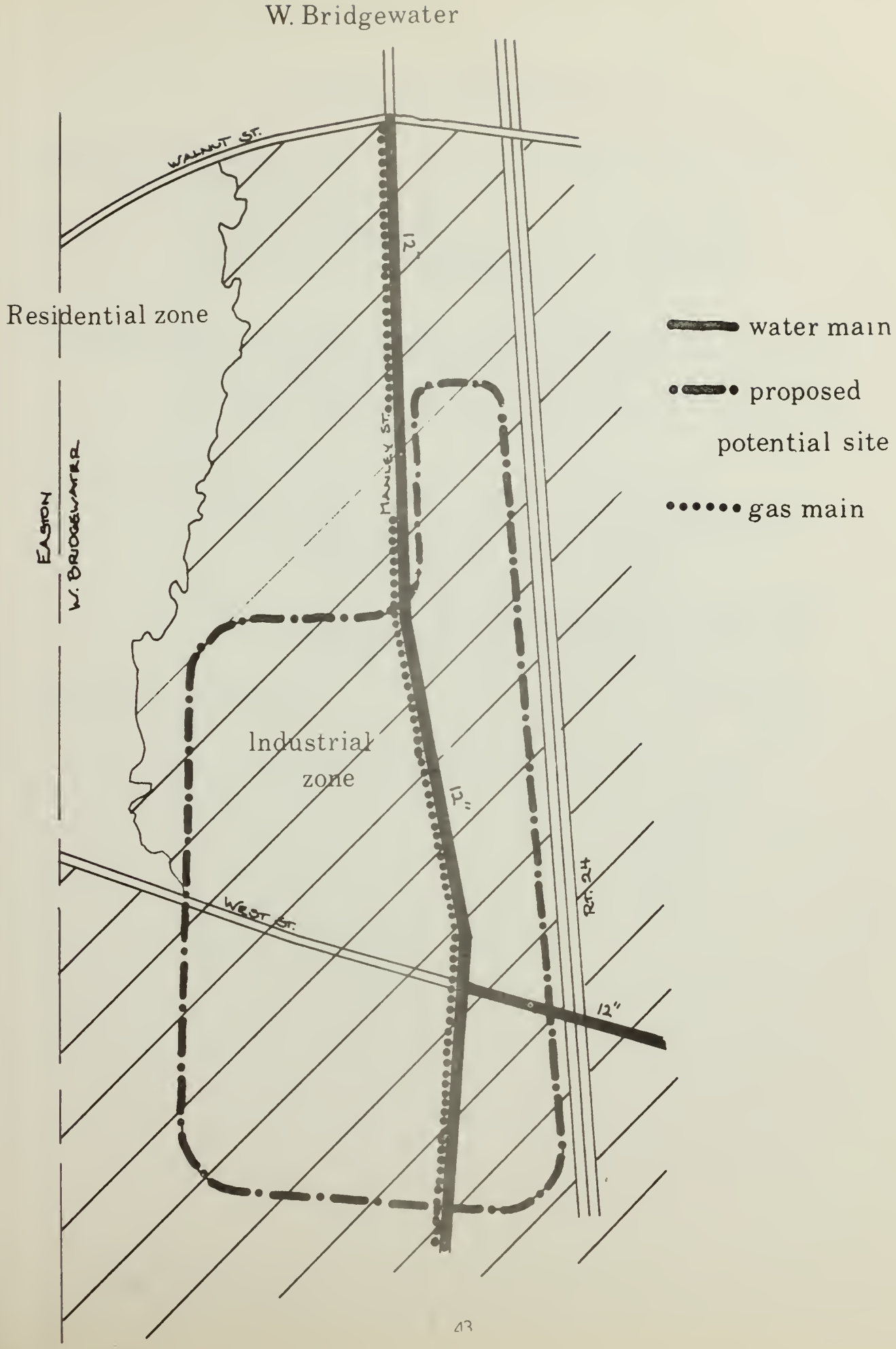
Transportation: Major highway access to route 24 via Manley Street and route 106. Distance from the site to route 24 is approximately one and one-half miles.

Utilities:

Water: Town of West Bridgewater water department. The site is served by a 12" water main running down Manley Street from route 106 to Walnut Street.

Gas: Served by the Brockton-Taunton Gas Company A 6" gas main is located along Manley Street.

Site size: 250 acres.


W. Bridgewater
WALNUT ST.
Residential zone
EASTON
W. BRIDGEWATER
MANLEY ST.
12"
Industrial zone
WEST ST.
RT. 24
12"
water main
proposed potential site
gas main

Easton Site Description

Location: Located north of route 106 near the Mansfield town line.

Distance to Brockton	=	9 miles
Distance to Boston	=	29 miles
Distance to Fall River	=	27 miles
Distance to Providence, R.I.	=	20 miles

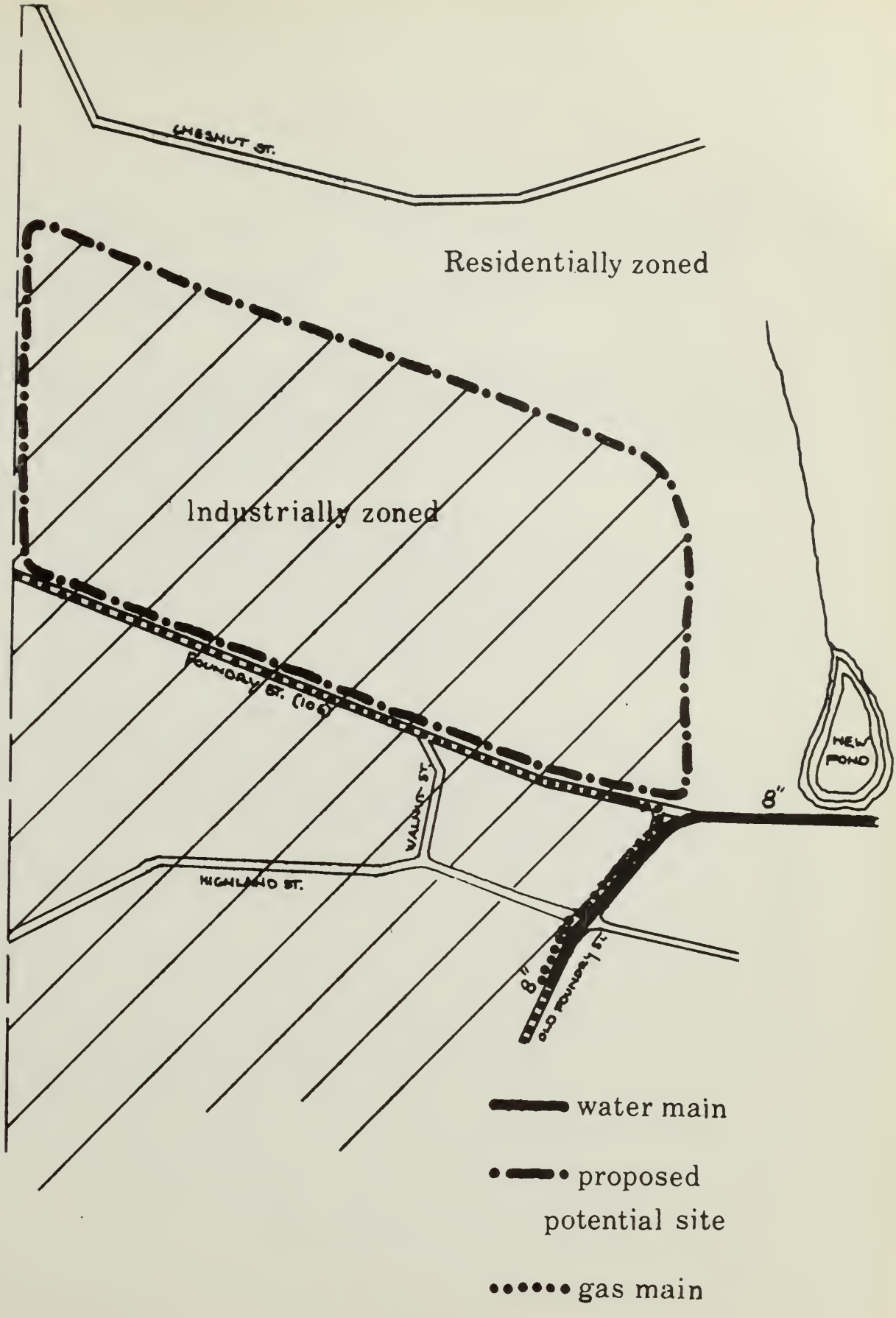
Transportation: Major highway access is to routes 24 and 95 via route 106. Distance from the site to route 95 is about four and one-half miles, with a portion of route 106 being four lanes. The distance from the site to route 24 is also four and one-half miles.

Utilities:

Water: Town of Easton water department. The site is served by an 8" water main along 106 which turns south at the Foundry Street intersection.

Gas: Served by the Brockton-Taunton Gas Company. A 16" gas main is located on route 106 (Foundry Street).

Site size: 400 acres.


CHESTNUT ST.
Residentially zoned
Industrially zoned
FOUNDRY ST. (10")
VALLEY ST.
HIGHLAND ST.
8"
NEW POND
8"
OLD FOUNDRY ST.
water main
proposed potential site
gas main

Hanson Site Description

Location: Located in South Hanson, north of route 27 (Main Street) and east of Franklin Street on the rail line.
Distance to Brockton = 7 miles
Distance to Boston = 23 miles

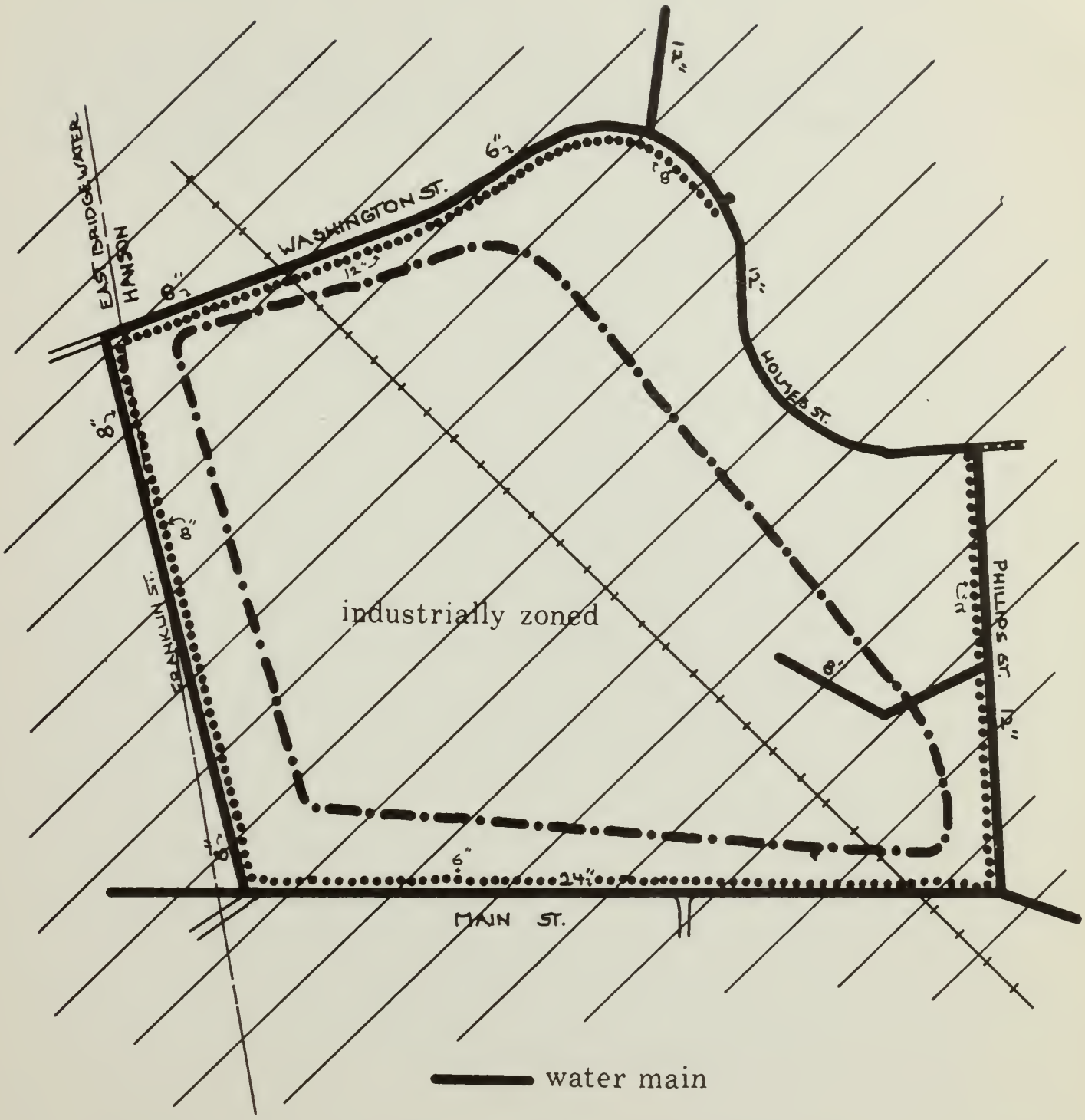
Transportation: The major transportation advantage is the presence of a rail line linking the site to Boston and the Cape. Nearest major highways are route 24 via route 27, and route 3 via routes 27 to 14 to 53.

Utilities: Town of Hanson water department.
An 8" water main goes into the industrially zoned area near the southern portion of the railroad. Another 8" main is located along West Washington Street to the north of the site and along Franklin Street to the west of the site. A 24" main comes to the southeast corner of the site.

Brockton-Taunton Gas Company
The site is served by several gas mains. An 8" and 12" mains are located along route 14 to the north of the site, an 8" main runs along Franklin Street to the west of the site, and a 6" main is located on Main Street to the south of the site.

Site size: 600 acres.

Hanson



water main

approximate outline of potential site

gas main

The objective of this study was to suggest areas in the OCPC region suitable for a large pre-planned industrial parks. During the course of the study, however, many sites which would be suitable for smaller, community - oriented industrial development were found. For the benefit of local Industrial Development Commissions and other interested citizens, the location of these smaller areas is presented on the map on the following page.

AVON

ABINGTON

WHITMAN

BROCKTON

EASTON

HANSON

PEMBROKE

WEST BRIDGEWATER

EAST BRIDGEWATER

BRIDGEWATER

COMMUNITY

INDUSTRIAL SITES

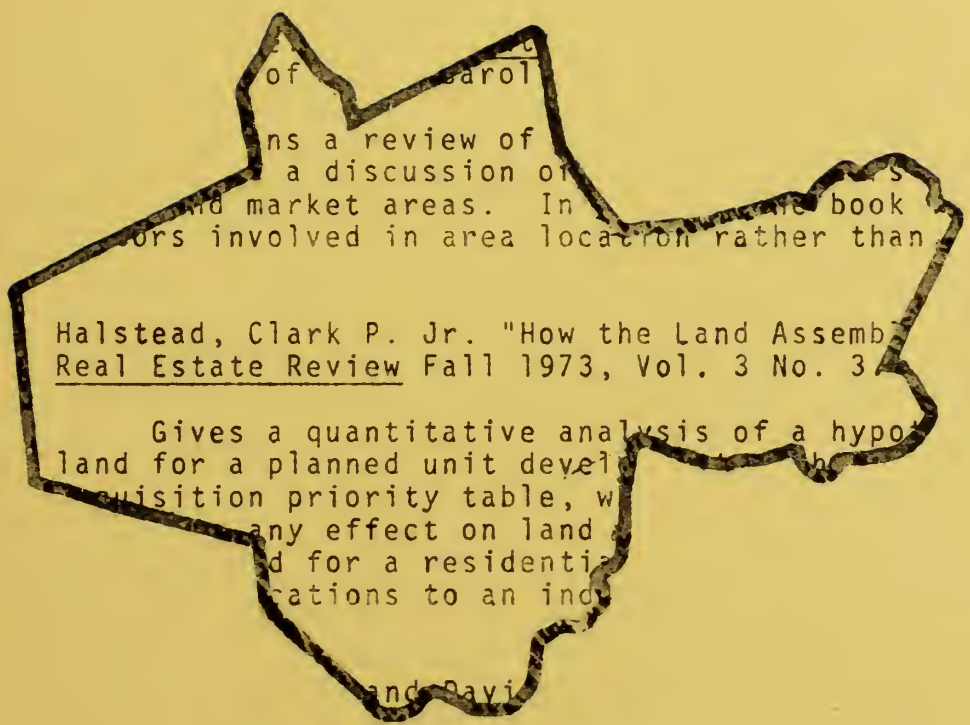
OLD COLONY PLANNING COUNCIL

SCALE IN MILES

0 1 2 3 4

NORTH

bibliography



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Halstead, Clark P. Jr. "How the Land Assemb
Real Estate Review Fall 1973, Vol. 3 No. 3

Gives a quantitative analysis of a hypo
land for a planned unit dev
quisition priority table, w
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BIBLIOGRAPHY

Beckman, Martin - Location Theory Random House New York, 1968.

Gives an academic exposition of the theory of location. Although quite technical the text can be understood without extensive knowledge of mathematical techniques. The spacial effects of economic relationships are seen in terms of "neighborhood effects" and transportation costs.

"Depleted Water Resources May Dictate Industrial Expansion Plans" Industrial Development, Vol. 142 No. 5, Sept/Oct 1973 pp. 18-19.

A concise discussion of the effect of increased water use on industrial development, including the potential of desalination as a solution to the problem.

Greenhut, Melvin L. Plant Location In Theory and Practice. The University of North Carolina Press, Chapel Hill 1956.

Contains a review of the economic literature of location theory, and a discussion of location factors such as transportation, labor and market areas. In general the book is a discussion of the factors involved in area location rather than specific site selection.

Halstead, Clark P. Jr. "How the Land Assembler Chooses His Targets" Real Estate Review Fall 1973, Vol. 3 No. 3. P. 54.

Gives a quantitative analysis of a hypothetical assemblage of land for a planned unit development. The article includes an acquisition priority table, which weighs all primary factors that will have any effect on land value. Although the hypothetical case was designed for a residential development, the method is applicable, with modifications to an industrial site selection strategy.

Karaska, Gerald and David F. Bramhall eds. Locational Analysis For Manufacturing, Regional Science Studies Series 7 M.I.T. Press Cambridge 1969.

Contains several articles relevant to this study including "state and local inducements for industry" and "factors in the location of Florida industry".

"Reservation and Preservation of Land for Industrial Use, Industrial Development. Vol. 142 No. 2 March/April 1973.

Discussion of importance of reserving land for industrial use, pressures on industrial land, methods to preserve good land for future use.

"Urbanizing Suburbia" Sales Management, March 4, 1974, Vol. 112, No. 5 P. 23.

Discussion of the movement of industry to the suburbs. If current trends continue most manufacturing employment and retail-wholesale jobs will be in the suburbs by 1975. The majority of service jobs will be there by the late 1980's according to sales management projections.

Whitman, Edmund S. and W. James Smith, Plant Relocation the Case History of a Move, American Management Association, New York 1966.

This book is a case study of a plant relocation made in 1962 by the General Foods Corporation. Of particular interest is the chapter entitled "Selecting the Site".

Yaseen, Leonard, Plant Location, American Research Council, New York 1956.

A clearly written discussion of the major factors considered in plant location including sections on raw materials, labor, power-water-fuel, taxes-labor laws and selecting the site. Contains an excellent discussion of the factors involved in selecting a specific industrial site. Also a good discussion of methods I.D.C.'s might use to make the area more attractive to industry.

appendix

Appendix A

Labor Force Characteristics

Population Growth - The population growth rate in the Brockton region has been substantially higher than that of the state as a whole. Since 1960, the Brockton city and SMSA growth rate has been particularly rapid. In fact, Brockton was the only city in the state to experience substantial growth between 1960-70.

Percent of Population Change

	1950-60	1960-70	1950-70
City of Brockton	+15.8	+22.3	+41.6
Brockton SMSA	+24.8	+27.0	+79.1
Massachusetts	+ 9.8	+10.5	+21.3

During the 1960's the nation's population growth occured almost exclusively in the suburbs. This fact partially explains Brockton's growth since the city is, to a great extent, becoming a suburb of Boston. One effect of the in-migration of workers from Boston has been an increase in the population aged 25-44. It is this young worker group that generates the heaviest consumer demands.

Community	% increase 1960-70	Estimated Population 1975	Population 1980
Abington	15.1	12,901	13,830
Avon	23.1	5,417	5,441
Bridgewater	15.1	12,645	17,003
Brockton	22.3	94,918	109,278
East Bridgewater	36.0	9,140	11,336
Easton	33.9	14,588	18,137
Hanson	63.6	9,664	9,522
Pembroke	127.5	16,263	16,324
West Bridgewater	41.3	8,926	9,749
Whitman	24.5	13,777	16,098
OCPC	28.6	198,239	226,718

In the Brockton SMSA the total non white population in 1970 was 3,956, or 2.1 percent of the total. The population of the state was 3.7 percent non white. The largest concentration of black and spanish speaking citizens is in the central city of Brockton. A total of 3,260 black and 936 spanish speaking residents lived in Brockton in 1970. Since 1950, significant changes have occurred in the Male/Female ratio for the city of Brockton, the Brockton SMSA and the state.

Male/Female Ratio

	1950	1960	1970
Massachusetts	48.4/51.6	48.3/51.7	47.8/52.2
Brockton SMSA	48.8/51.2	49.1/50.9	48.6/51.4
Brockton City	47.5/52.5	48.1/51.9	48.0/52.0

There has been a steady decrease since 1950, in the number of males relative to the number of females in the State, SMSA and City. In the city of Brockton, the ratio shows the greatest aberrance from the national ratio, particularly in the 18-21 age category (45 males for every 55 females). This ratio could be indicative of a lack of desirable employment for young males graduating from high school.

Population by Age Groups 1970

	Massachusetts		Brockton SMSA		Brockton City	
Age groups	Number	% distribution	Number	% distribution	Number	% distribution
Under 6	574,909	10.1	23,234	12.1	11,163	12.5
6-9	551,670	9.7	21,040	11.1	9,381	10.5
10-15	665,902	11.7	23,458	12.4	10,067	11.3
16-19	412,057	7.2	12,846	6.8	5,331	6.0
20-24	454,489	8.0	13,544	7.1	6,694	7.5
25-34	659,854	11.6	23,911	12.6	11,195	12.6
35-44	634,113	11.1	21,495	11.3	9,685	10.9
45-64	1,211,772	21.3	36,593	19.3	17,555	19.7
65 over	636,724	11.2	17,783	9.4	9,769	11.0
Total	5,689,170	100.0	189,834	100.0	89,040	100.0

Educational Attainment - In 1960 the median number of school years completed was the same for Brockton as for the state, 11.6. A slightly higher percentage of Brockton residents had completed high school or higher (47.4) than had residents of the state (47.0). By 1970 the median year of school completed had risen to 12.2 while the figure for Brockton City was 12.1 and for the Brockton SMSA, 12.2.

Educational Attainment 1970

	Median years school completed	# less than H.S.	% less than H.S.	# college graduates	#college graduates
Abington	12.5	1908	30.5	666	10.6
Avon	12.3	1027	38.9	198	7.5
Bridgewater	12.0	2986	45.4	600	9.1
Brockton	12.1	21,282	44.2	3,456	7.2
E.Bridgewater	12.3	1670	38.2	340	7.8
Easton	12.5	1844	30.7	848	14.1
Hanson	12.3	1306	35.8	320	8.8
Pembroke	12.4	1817	32.7	526	9.5
Stoughton	12.3	4361	36.2	1050	8.7
W.Bridgewater	12.3	1239	37.7	257	7.8
Whitman	12.2	2869	42.6	405	6.0
SMSA (excludes Pembroke)	12.2	40,492	40.6	8140	8.2

Employment Orientation and Specialization - During the past few decades there has been a steady trend toward service employment among the nation's non-farm workers. Because of the rapid decline in manufacturing jobs in the area between 1950 and 1970, the trend toward service employment has been particularly dramatic in the Brockton area.

Service Producing	Goods Producing
Transportation, Communications, Utilities	Manufacturing
Wholesale and retail trade	Agriculture, Mining
Finance, Insurance, Real Estate	Construction
Services	
Government	

Employment Orientation

	1950		1960		1970	
	% Services	% Goods	% Services	% Goods	% Services	% Goods
Brockton	50.9	49.1	55.8	44.2	62.3	37.7
SMSA	41.9	58.1	47.9	52.1	55.1	44.9
State	45.1	54.9	48.2	51.8	56.3	43.7

Employed Population 14+ by Occupation, Sex

	Brockton		E.Bridgewater		Easton	
	Male	Female	Male	Female	Male	Female
Professional, Technical	2421	1749	227	172	577	276
Managers, Administration	2338	314	251	30	459	28
Sales	1498	1052	138	57	212	135
Clerical, Kindred	1835	4532	113	423	212	602
Craftsmen, Foremen	4642	286	491	21	617	12
Operatives, except transport	2815	2823	303	177	280	201
Transport operatives	1270	79	177	15	172	9
Laborers, except farm	1166	153	99	10	124	26
Farmers, Farm managers	4	17	6	0	19	5
Farm laborers, foremen	24	0	4	5	15	0
Service Workers	1909	1962	204	267	292	244
Private household workers	18	160	5	5	0	25
Occupation not reported	1533	1026	60	32	162	89
Total	21,473	14,153	2078	1214	3141	1652

Employed Population 14+ by Occupation, Sex

	Abington		Avon		Bridgewater	
	Male	Female	Male	Female	Male	Female
Professional, Technical	426	243	163	92	406	291
Managers, Administrators	462	69	134	28	219	32
Sales	220	160	88	43	189	82
Clerical, Kindred	262	712	92	274	179	462
Craftsmen, Foremen	665	51	394	5	649	52
Operatives, except transport	366	305	171	159	441	278
Transport operatives	114	7	92	6	123	5
Laborers, except farm	107	9	79	9	184	14
Farmers, Farm managers	4	0	10	0	34	5
Farm laborers, foremen	13	5	27	0	43	0
Service workers	241	293	78	129	244	246
Private household workers	0	45	0	5	0	5
Occupation not reported	119	70	24	11	106	96
Total	2999	1869	1352	761	2817	1568

Employed Population 14+ by Occupation, Sex

	Hanson		Pembroke		W.Bridgewater	
	Male	Female	Male	Female	Male	Female
Professional, Technical	229	108	171	55	192	140
Managers, Administrators	191	33	82	27	219	46
Sales	116	81	42	31	84	68
Clerical, Kindred	119	331	63	120	125	393
Craftsmen, Foremen	493	27	233	0	413	16
Operatives, except transport	185	157	39	40	142	146
Transport operatives	62	16	61	5	99	31
Laborers, except farm	91	14	38	6	68	0
Farmers, farm managers	0	0	0	0	11	5
Farm laborers, foremen	0	5	5	0	48	8
Service workers	125	168	45	54	139	205
Private household workers	0	4	0	8	6	32
Occupation not reported	49	42	33	20	100	101
Total	1660	986	812	366	1646	1191

Employed Population 14+ by Occupation, Sex

	Whitman		OCPC Total	
	Male	Female	Male	Female
Professional, Technical	346	257	5158	3383
Managers, Administrators	352	40	4707	647
Sales	288	140	2875	1849
Clerical, Kindred	248	740	3781	8589
Craftsmen, Foremen	839	52	9436	522
Operatives, except transport	366	403	5108	4689
Transport operatives	221	6	2391	179
Laborers, except farm	119	11	2075	252
Farmers, farm manager	4	0	92	32
Farm laborers, foremen	0	0	179	23
Service workers	211	364	3488	3932
Private household workers	5	21	34	320
Occupation not reported	133	64	2319	1551
Total	3132	2108	41,110	25,868

Although not specifically a labor force characteristic, another important consideration in industrial location decisions is the area's income level. The following table presents family and individual income levels as delineated in the 1970 census.

	Aggregate $ Family Income	Mean Family Income	Aggregate $ Income of Unrelated Individuals	Mean Unrelated Individual Income
Abington	$ 37,049,850	$12,449	$ 2,673,050	$ 4,367
Avon	15,517,900	12,355	683,550	3,714
Bridgewater	30,657,550	11,674	2,718,450	3,168
Brockton	244,930,500	11,168	25,556,100	3,816
E.Bridgewater	23,444,400	11,640	1,573,550	3,875
Easton	35,560,650	12,650	3,383,100	2,706
Hanson	19,629,150	11,628	1,047,800	4,125
Pembroke	31,709,335	11,645	1,464,000	4,575
W.Bridgewater	18,002,150	11,969	2,331,300	1,835
Whitman	37,815,650	11,722	2,223,550	3,705

APPENDIX B

Regional Economic Trends

Manufacturing - Manufacturing employment in the area has been characterized by a steady growth in the durable goods sector since 1950, and a sharp decline in non-durable goods sector. Between 1960-70 the Brockton SMSA had a net gain of 25 firms engaged in durable goods manufacturing and a net loss of 34 firms in the non-durable goods sector.

In 1970, 39.4 per cent of the Brockton SMSA'S industrial income originated in the manufacturing sector. The figure for the United States was 27.6. In the year 1971-72, the Brockton SMSA gained 662 manufacturing jobs, after several successive years of losing manufacturing employment. What is more encouraging is the fact that substantial gains were made in relatively high paying growth industries such as electrical equipment, scientific instruments and printing and publishing. For the first time in many years an employment gain was made in the leather industry, possibly indicating that adjustments to foreign competition are being successfully made.

Trade Sector - Employment in the wholesale trade sector has increased substantially since 1950, in the State, SMSA, and in the city of Brockton. In most categories the number of employees increased at a much higher rate than did the number of firms, indicating a trend toward larger firms. Between 1950 and 1970 the per cent of employment increase in the wholesale trade sector in SMSA was substantially higher than in the State.

Between 1963 and 1967 retail sales increased much faster in the Brockton SMSA and the city of Brockton than in the State. The most dramatic sales increases occurred in the categories of General Merchandise and Furniture-Appliances. Sales decreases were registered in Lumber-Building Materials and Drug Stores. Between 1963 and 1967 retail sales increased by 16.4% in the City, 17.4% in the SMSA and 9.5% in the State.

Service Sector - In recent years the Service Sector has been the fastest growing portion of the Brockton area economy. However, this sector in the SMSA and City is growing at a slower rate than in the State. Within the Service Sector, the fastest growing category has been "Miscellaneous Business Services". Between 1954-1967 employment in the category grew by 190 per cent in the SMSA and 144 per cent in the City. Total employment in the Selected Services Sector grew by 55.7 per cent in the State, by 21.0 per cent in the SMSA and by 18.9 per cent in the City between 1954 and 1967. Selected Service employment growth between 1963-67 was negligible in the City and SMSA, while State Service employment grew by 17 per cent.

Effective Buying Income - From 1967 to 1970, effective buying income per household increased at a faster rate than in the State and in other nearby SMSA'S.

Effective Buying Income Per Household

Area	1967 dollars	1970 dollars	Percent increase
Brockton	$ 9,344	$11,431	22
Boston	10,540	12,649	20
New Bedford, Fall River, Taunton	8,404	9,866	17
Massachusetts	9,814	11,744	20

Comparison of 1972
Retail Sales Per Category in $000's

City	Total retail sales	Food	General mdse.
Brockton	$ 219,051	$ 50,148	$ 64,898
Boston	1,618,404	276,980	459,077
Fall River	173,775	38,219	40,439
Lawrence	140,347	23,217	24,136
Lowell	194,517	39,237	49,008
New Bedford	180,316	41,418	35,115
Plymouth Co.	580,915	152,934	113,906
Massachusetts	10,980,497	2,582,983	2,228,828

City	Furniture, household appliance	Auto-motive	Drug	*Buying power index
Brockton	$11,112	$ 27,576	$ 4,506	.0487
Boston	63,498	169,494	43,892	.3314
Fall River	16,949	22,752	5,875	.0455
Lawrence	10,774	28,448	5,097	.0352
Lowell	8,398	31,642	8,062	.0473
New Bedford	11,530	22,091	6,342	,0482
Plymouth Co.	21,125	85,974	16,015	.1638
Massachusetts	510,491	1,607,205	344,021	2.9434

*Buying power index - A weighted index that converts three basic elements - population, effective buying income and retail sales - into a measurement of a market's ability to buy, and expresses it as a percentage of the U. S. potential.

Source: Sales Management Magazine

Appendix C

Preserving Land for Industrial Use

During the past 15 years the population of the area comprising the Old Colony Planning Council has grown by over 40 per cent. As our urbanized area has been expanding land has been used up at an accelerated rate. Too often, because of the pressures of growth and development OCPC communities have been unprepared to evaluate development proposals in terms of local development objectives. As a result, the pattern of land use in many instances has been a matter of first come, first served, without adequate consideration having been given to rational land use planning.

To provide adequate employment opportunities for the future, particularly in the "unemployment-plagued Brockton area", communities should plan to set aside adequate areas for future industrial expansion.

There are a considerable number and variety of ways by which industrial land may be preserved. The following list was suggested in an article in industrial development, entitled "Reservation and Preservation of Land for Industrial Use".[1]

Purchase: The most effective way to insure that a given tract of land is kept for industrial use is purchase by the local municipality. This insures that the land is safe from other land use competitors. Because of its control over local taxation, a community can hold a tract of land almost indefinitely. A private purchase can also hold industrial land, of course, but the combined effects of taxation, interest charges and inflation makes it economically unfeasible to hold the land for a long period of time.

Zoning: In the short run zoning can be an effective tool for preserving land for industrial use. Used to preserve land for a long period of time, however, to be used in 10 to 20 years for example, imposes a restriction upon the owner which may reduce its market value in the interim.

Development Easements or Options: Under this method a private or public agency may purchase the right to future development of a tract of land, with the stipulation that the present owner remains in possession of the land for a specified amount of time.

Air Rights: This is an important area for potential industrial development, particularly in built up areas such as downtown Brockton, This possibility should not be overlooked when considering individual industrial sites in congested areas.

[1] "Reservation and Preservation of Land for Industrial Use" Industrial Development, Vol. 142 No. 2 March/April 1973 p. 2-3.

Land Reclamation: Lands that previously used for other purposes, particularly town owned dump sites or land fills, are often ideally suited for industrial use. The city of Brockton has been able to create valuable industrial land at the site of the old sewer beds and at a former sanitary land fill site.

Renewal: Redevelopment and renewal areas funded by various Federal and State programs may provide land suitable for industrial use. Careful planning is necessary, of course, to insure minimal conflict with neighboring land uses.

Excess Condemnation: Often, when land is provided for public works projects, it is necessary to acquire more land than is required for the construction of the new facility. Unused portions of lands acquire by this means can provide valuable industrial sites.

Variation From Former Use: Former railroad or other rights of way may revert to public ownership or may be purchase for industrial use. Phased out military bases have provided industrial sites in many parts of the country.

Land Banking: Under the laws of Massachusetts it is possible for a municipality to create a land banking agency which can hold desirable industrial land, and to finance improvements on them. Such industrial corporations have been quite successful in Springfield and Fitchburg, Mass. As reserved industrial lands are sold to industry it is necessary to acquire an equal amount of new lands for future industrial growth.

New Towns: One concept of new town development is that they should be self supporting. Thus the Planners of the town should provide enough industrial acreage to support jobs for the towns residents. Although it is unlikely that a new town will locate in the Old Colony region, the concept can also be applied to smaller planned unit developments.

This list does not represent all the tools available to municipalities. It does, however, include most of the techniques currently used to preserve industrial land. None of these methods are as effective as they might be in enabling communities to control and guide land use within their borders. Economic pressures are often much greater than the good intentions of local communities. Legislative changes are necessary to stop the uncontrolled growth and urban sprawl plaguing the Old Colony area. With tax rates continuing to spiral, communities can no longer permit developers to reap windfall profits from land speculation and unsuitable development practices, while the towns are left to pick up the cost of skyrocketing municipal service demands.

If land cannot be preserved by traditional zoning methods, then the best solution is purchase of the land by a private, semi-public or public agency which can hold the land until it is needed for industrial use. This can be done by individuals, public corporations or governmental agencies. Public corporations of this type have been quite successful in Pittsfield and Springfield.

Among the items that should be considered by local and state legislators that could help bring a halt to uncontrolled speculation are:

1. Reform of Assessment practices: Requirement that taxation be related to the ability to pay based on present use. (a provision to prevent windfall profits would be necessary)

2. Shifting of tax burden away from the land. (for example collecting a high percentage of municipal revenues with a state graduated income tax)

3. Consideration of public development corporations for some OCPC communities.

Regardless of the methods used the time has come to insure a adequate supply of land for all types of uses in the Old Colony area.